Labs Given Major Role In Oil Program

Sandia has been named by DOE to direct
geotechnical studies for the Strategic Petroleum Reserve (SPR) sites in Louisiana
and Texas.

SPR is a government program to store up
to one billion barrels of crude oil in un-
derground salt domes near the Gulf of Mexico
as a hedge against foreign oil embargoes and
other disruptions in fuel supplies. About 85
million barrels of crude oil are now stored at
three of the five existing sites.

The new assignment comes following
release of an SPR systems and engineering
study prepared by Hap Stoller's GeoEnergy
Technology Department 4730. Prepared at
the request of DOE, the study provides a basis for
many of the upcoming geotechnical studies.

“We found no insurmountable technical
problems which would preclude a successful
SPR,” says Jim Ney, supervisor of SPR
Projects Division 4701.

The division was formed last December
to conduct the study. Its staff includes Tom
Bickel, Ken Goin, R.J. Hart, Jim Linn,
Mickey Lyle, and John Mitchner. Other
organizations and people supported the effort
as well. Principals were Tony Russo (5511),
Pete Hilton (formerly 5522), Joe Tillerson
(5531), Dave Douglass (5831) and Marv
Becktell (4004).

About $7 million has been earmarked for
the new geotechnical program over the next
two years. Some 25 Sandians and several con-
tractors will pursue two major efforts —
geological site characterization and design as-
sistance and evaluation for both present and
future storage sites.

Techniques and locations for excavating
new storage caverns at two of the sites will
also be studied. Each of these new caverns —
2000 feet high and 230 feet in diameter — will
hold 10 million barrels of crude.

Caverns are created by leaching — in-
jecting water into a borehole to dissolve the
salt, leaving a void. This salty water (brine) is
pumped to the surface and disposed of in deep
wells or into the sea. The existing caverns,
which were leached to obtain brine for com-
mercial uses, vary greatly in size and shape.

Three operating SPR sites in Texas and
Louisiana are filled to 60 percent of their
capacities. The schedule calls for them to
reach their 147-million barrel limit this fall,
depending upon oil availability. Two more
facilities, scheduled to get oil later this year,
have capacities of 75 million and 22 million
barrels. After additional expansion in the 80's,
SPR's five original sites will be capable of
storing about 530 million barrels.

DOE currently is evaluating proposals
from private industry for development of ad-
ditional storage locations. Plans call for this
aspect of the project to add another 250 mil-
lion to 500 million barrels to SPR by late 1985.
(Ed. Note: Sandia's initial interest in salt
domes dates back to the early 70's when the
domes were studied to determine if underground
explosions could be decoupled within the cavities.)
Afterthoughts

The new military—Having served in the military for so long (nine years), we retain a strong interest in that institution and its sometimes curious workings. Here's an item that caught our eye in a recent KAFB Bulletin. "Uniform Change. Umbrellas are now an optional item for men. They must be commercial, solid color, dark blue or black, without ornamentation. May be carried when weather conditions warrant, provided safety regulations/practices are not violated. It will not be carried during military formations. The umbrella will be carried in the left hand to permit saluting."

Well now, that's sort of revolutionary. In that military world of which we were a part, you were expected to be stoic in the face of the ineffable danger (or, as Navy Regs so memorably put it, you were not "...to pusillanimously give quarter"). Yet today we acknowledge that our soldiers, maybe even our generals, can flinch just like regular folks under a few raindrops. You know, it's probably just as well John Wayne isn't around to see something like this. Can you imagine the Duke striding through the Vietnam monsoon, umbrella deployed, as he wipes out the enemy in "Green Berets"?

* * *

Big sense—Every now and then amongst the whines, mutterings and assorted ruck of the Journal's Letters page, there appears a fresh thought of manifest sensibility. I refer to that recent letter in which the writer boldly proposes that one answer to the fuel shortage is the suspension of driving privileges for 16 and 17 year old students. "The parking lots of the high schools are jammed with student autos, ridiculous in light of the free and working busing system. Too, the streets are teeming with drivers of this age 'cruising' needlessly each evening and weekend... Another benefit for revoking the licenses of these youngsters: given their record of recklessness and accidents, it is certain that fewer grieving parents will regret." Now here is an idea whose time has indeed come. Unfortunately, given our society's obsessive deference to our adolescents, it's not likely we'll ever see passage of the legislation necessary to put the 16 and 17 year olds on their feet.

Sympathy

To Reyes Chavez (1474) on the death of his wife in Albuquerque, June 26.

To Adelina Wade (3321) and Donald Wade (3426) on the death of their son in Albuquerque, June 23.

To Alfred Herrera (1471) on the death of his brother in Albuquerque, June 24.

To David Judd (2625) on the death of his father in Albuquerque, July 2.

Supervisory Appointment

DICK STRATTON to supervisor of Systems Studies Division III 5613, effective July 1. Dick has been a member of the technical staff in the Exploratory Weapons Systems Directorate 5600 since joining Sandia in August 1969. As a systems analyst, his work has been to compare and evaluate various weapons systems in support of Phase 1 and 2 studies. He has also conducted studies of new weapon systems in advanced development programs.

Dick earned a BS in engineering science and an MS in EE from Brigham Young University. He received his PhD in EE and systems studies from Michigan State University. Off the job, Dick enjoys church activities, soccer, gardening, photography and his family — wife Teddy and five children. The Strattons live in NE Albuquerque.

TV HOST Amado Trujillo (4552) has been the interviewer on KNME's (Channel 5) Ayer Y Hoy program for a number of years. He's shown here as he interviewed Dean and Mrs. Robb for a one-hour special to be run tomorrow, July 14, at 5 p.m. Entitled Dean Robb: A Portrait, the program was shot on location in Dean Robb's home and portrays the still-active life of the 86-year-old composer.
LIVERMORE NEWS

VOL. 31 NO. 14    LIVERMORE LABORATORIES    JULY 13, 1979

8100: Systems Development at SLL

8100. Livermore's principle weapons group, is facing some new challenges these
days. Formed in 1956 to complement the
weapon work across the street at LLL, the
directorate has played an important role in the
development of many of the nation's
stockpiled weapons, including Minuteman
and Polaris.

Bill Spencer is the third 8100 director,
following Leo Gutierrez (now 8400) and Jack
Howard (now 2). Bill summarized for us the
shifts in philosophy governing weapon
development over the last three decades. In his
view, the first phase (covering the period in
which Sandia Livermore was founded and
continuing until the early 60s), "was
dominated by schedule — increase the
stockpile as rapidly as possible."

In the second phase, from the mid-60s to
the mid-70s, "the emphasis was on perfor-
mance. The number of weapons in the
stockpile actually decreased. From high yield
weapons we went to weapons tailored to a
particular job or to weapons suitable for use in
a variety of operational situations.

"We're now in a third phase, one
dominated neither by schedule nor by
performance alone. One contender for domi-
nant theme is improved command and control
capabilities. Another is safety and safeguards.
But I believe that cost effectiveness, along with
performance, will emerge as the dominant
theme of the current phase." The key to a
cost-conscious weapon program, Bill feels, is
close cooperation among the groups involved
— LLL, OMA, ALO, DoD, the production
agencies, and Sandia.

Bill's goal for the directorate — max-
imum performance, minimum cost — is
reflected in the departments and divisions, es-
specially in Phase 3 program work. Says Jack
Wirth (8150). "We're coordinating the
mechanical and electrical work on the B83.
This is a modern bomb that uses components
and technologies first developed for the B77
and B61. We're constantly scrubbing material
costs with David Schuster and Dick Claassen,
component costs with Don Gregson, Charles
Tapp and Gene Reed's 2000 organization, test
costs with Roger Baroody and Bill Gardner,
and we're concerned with the costs of the whole
bomb system, from its inception
through production and stockpile sampling."

Other Phase 3 programs — the W84
GLCM (ground-launched cruise missile) and
the two artillery rounds (the W79 eight-inch
and W82 155 mm) — as well as the W70-4
Lance missile warhead (now in Phase 4) face
similar scrutiny. Not only must these new
weapons meet rigorous performance specs,
they must also "always work when they're
supposed to work but never when they're not
supposed to work" (such as during a transport-
tation accident or if in the hands of terrorists),
and at the same time meet development
budget and production cost goals.

"This means," says Jim Barham (8110),
"that we won't use expensive, advanced
technology unless it offers a major advantage
in terms of performance or safety. Every new
component or material must pass both a per-
formance and a cost examination." His group
includes the "ideas ahead of time" people who
study possible future weapons and their re-
quirements in terms of Sandia-developed
technologies.

"We're also cost-conscious when it comes
to support activities," says Ralph Cozine
(8160). "This applies whether we're building
testers (which Ralph's people do) or working
with the production agencies. We try to get
more done with less money."

Bill Alzheimer's Applied Mechanics
Department 8120 contributes another kind of
support to the directorate, with expertise in
structural analysis, experimental mechanics
and the thermal sciences. Work here, prin-
cipally related to the weapons programs, has
also found application in the solar central
receiver program.

Summing up his directorate's working
philosophy, Bill Spencer has to say: "We
proceed on three assumptions. First, nuclear
weapons remain the keystone to national
defense. Second, because resources to develop
them are limited, there is a need placed on us
for the highest order of engineering skill. And
third, to be a credible deterrent our nuclear
weapons must be modern yet cost-effective."
The Credit Union offers several types of savings accounts, outlined here:

<table>
<thead>
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<th>Type of Account</th>
<th>Annual Dividend Yield</th>
<th>Effective Yield</th>
<th>Minimum Balance</th>
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<td>Regular Share Account</td>
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<td>6.13%</td>
<td>$5</td>
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<td>Fixed Rate Share Certificates:</td>
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<tr>
<td>12-35 months</td>
<td>6.75%</td>
<td>6.86%</td>
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<td>36-60 months</td>
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<td>61-72 months</td>
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<td>8.06%</td>
<td>1000</td>
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<tr>
<td>Variable Rate Share Certificates:</td>
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<td>46-72 months</td>
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<tr>
<td>Money Market Share Certificates:</td>
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<td>20 weeks</td>
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*Rate is based on the higher of 7.75% or 1% below the average 4 year rate for U.S. Treasury securities as determined each month.**

On regular share accounts, dividends are earned for the month if funds are deposited by the 10th of the month. Dividends are paid quarterly and, if funds are withdrawn before the end of the quarter, dividends are lost on the amount withdrawn. The dividend rate on regular share accounts is anticipated to be 6% but is, of course, dependent upon earnings being available to cover all dividends.

On share certificates, dividends are dependent upon sufficient earnings being available for that dividend period. While it is anticipated that sufficient funds for the specified dividends will always be available, Federal regulations prohibit payment of dividends in excess of available earnings.

Dividends are compounded daily on share certificates and posted to those accounts on the first day following each calendar quarter, with the exception being the Money Market Share Certificates upon which Federal regulations do not allow compounding of interest. Dividends are paid at maturity on the Money Market Share Certificates.

POSTED dividends may be withdrawn without penalty at any time, but if left on deposit they continue to accrue dividends at the same rate as the certificate.

All or part of the principal amount of a share certificate may be withdrawn at any time; however, early withdrawals of principal must be in multiples of $500. If certificate funds, other than dividends, are withdrawn prior to maturity, a substantial penalty is imposed.

Each member's account is insured to $40,000.

Bonuses on Regular Share Accounts — We are pleased to announce a bonus dividend on regular share accounts for the second quarter of 1979. The bonus dividend, ½ of 1%, was added to the 6% dividend for an effective annual rate of 6.50% for that quarter.

RECENT GRADUATES under Sandia's Educational Aids program are (front row) Randy Dabbo (4051), MS-EE, UNM; Neil Tucker (3252), BSBA, UofA; John Bornholdt (2454) MS-EE, UNM and Larry Jennings (2454), BS-Math; UofA. Standing are Lottie Carroll (4313), BS-Pay, UofA; John Garcia (3653) BSBA, UofA; Larry Holmes (3253), BSBA, UofA; Silvano Candelaria (2583), BSBA, UofA; Soila Brewer (4337), BSBA, UofA; Arthur Ahr (2654), MA-Bus. Ad., Highlands; Virginia Podvin (1247), MA-Bus. Ad., Highlands; Jean Gaeddert (3643), BSBA, UofA; and Joe Honest (2454), MA-Bus. Ad., Highlands.

Take Note

Besides those shown in the photo above, a number of other Sandians have recently graduated or received advanced degrees. Awarded PhD’s are Charles Albright (1473) and James Kelsey (5613). Master’s degrees have been bestowed on Frances Armijo (3433), Serafico Carrillo (3253), David Devore (4342), Hazlett Edmonds (3511), Kermit Goetsche (1711), Sandra Green (3644), Charles Hills (3822), Adrian Jones (5532), and John Mareda (2251).

Those receiving bachelor’s degrees include Wanda Cupp (3322), Edwin Hawn (1472), Larry Stephenson (5631), Stan Love (4147), Katherine Ward (1000), Irene Leyba (4200), and Betty Mathis (4200).

**Colloquium for Wednesday, July 25, features Prof. John Kessell, a recognized historian of the Spanish Southwest, whose talk is entitled: “From dust to dust, the missions of New Mexico since 1776.” The colloquium begins at 10 a.m., Bldg. 815.

If you plan that far ahead, the State Fair dates this year run from Sept. 12 to 23, with the premier event — the parade — set for Saturday, Sept. 15. Entertainers at Tingley include Benitez, Prides, Rabitt, Millsap, Rogers & Smith, but not all on the same night.

**

A rather little publicized development became effective April 1 when, under a new ruling by the New Mexico DMV, motorists will now “own” their license plates. If you sell your car, you take off the plate and put it on your next vehicle. If you don’t place it on another vehicle within 30 days, you are then required to surrender the plate to a DMV office. No additional fees will be charged under the new setup. Plates will be replaced only when the old one is lost, stolen, or becomes illegible. We suggest you call DMV if you have need of further information.
Fun & Games

Biking — We had an interesting note from retiree C.W. (Dick) Dickinson following our article on bicycling to work. Dick lives in Sun City, Ariz. and writes: "Bike riding is something Sun Citians are quite familiar with. I look out from my patio at 7 a.m. and see a convoy of bikes 50 strong with a flag waver in front and one behind. Reaching a crossing, the front man stops and waves furiously until the last biker passes. And woe betide the driver of an auto or golf cart (of which there are hundreds) if he doesn't stop on the dot!"

Our Plant Engineering contact relates that work to construct a paved bike path from inside the Gibson Gate across the school yard should begin this month. The bike path will lead into the military housing area; from there, it's an easy shot into the Labs.

Skiing — Here's the present schedule of Coronado Ski Club trips: Steamboat Springs, Jan. 12-19; Telluride/Purgatory, Jan. 25-29; Best of Colorado/Dillon, Feb. 3-8; Crested Butte, Feb. 15-18 & 22-23; and Utah, March 15-20. Fast trips are also planned to Wolf Creek and Monarch in December, Purgatory in January and March, and some one-dayers to Taos. Bob Butler, 4-3126, has additional information on these trips.

Running — If you're looking for a different kind of run, you might consider the 4th annual Return Running Tour, being organized by Pete Richards (5132) for the weekend of July 28 and 29. The first day's route takes you over Wheeler Peak (New Mexico's highest), while the second begins with a hike over Gold Hill. Pete notes that the more participants (and vehicles), the more variations and greater ease of logistics. What's it like? We'd say several La Luz trail runs, back-to-back.

Tennis — Local pros are being engaged by the Sandia Tennis Assn. to give lessons to Sandians, their spouses and kids. The kids' lessons are set for Tuesday and Thursday mornings at the C-Club courts starting July 24. Cost for four lessons is $4. For beginning adults, there are lessons on Tuesday and Thursday evenings after work and, for intermediates, lessons on Monday and Wednesday evenings. These begin the week of July 23 at the Albuquerque Academy courts, and the series of four lessons costs $6. The number of participants is limited; call Chris Morgan on 4-9854 to sign up.

PARS Means Fast Travel Arrangements

Programmed Airline Reservations System (PARS) has recently been installed in Travel Planning and Reservations Section 3743-2. Sandy Borgrink, supervisor of the group, explains: "PARS is a computerized reservations system. It gives us instant access to flight availability and schedules anywhere in the world. With a direct link to TWA's central computer in Kansas City, Sandia's travel section and SATO now have the same up-to-date equipment as the airlines themselves."

Before PARS, the making of reservations following preliminary discussions with the traveler required one or more telephone calls to each of the airlines involved. With PARS those calls are eliminated. For Sandians this means that during your initial call to Traffic, your flight is arranged and confirmed, and hotel and rental car requests made.

All aspects of travel arrangements are now speeded up. A CRT for each of the five passenger traffic agents provides instant access and retrieval of information required to complete the reservation; a copy printer produces a copy of all information pertinent to the confirmed reservation; and another printer produces the ticket, thus eliminating hand-written tickets.

"It's Traffic's great leap forward," says Sandy. "We move people — fast."

With the cost of gasoline selling higher than a spring kite, drivers do almost anything to squeeze the last mile from a gallon of gas — except drive 55 mph. As a last resort, we presume they may even decide to give that a try. Continental Oil Company (Conoco) did, with impressive results. They demanded that the drivers of their fleet of 200 tractors and 400 trailers (who log 26 million miles a year) drive no faster than 55. Gas consumption dropped 25 percent. Not all the savings could be attributed to decreased speed; but that last ounce could.

Conoco also found ways to improve the aerodynamics of their rigs and used proven concepts like radial tires, fuel-efficient diesels and improved clutches to boost their miles per gallon.

SHIRLEY CLEARY reads PARS display screen to determine best itinerary for her customer. She has instant access to all domestic and international flight schedules and seat availability, types of fares (super saver, excursion and the like), fare quotes, hotel and rental car availability, tour arrangements, credit card validation, in-flight movie and meal schedules, and much more.

THIS COPY FROM THE PRINTER shows weather conditions for specific areas. Other information is available too — skiing conditions, shows playing in Las Vegas, London and on Broadway, currency conversion rates, etc. This information is passed on to the customer via telephone while the reservation is being made. PARS can also make arrangements for other services such as special meal requirements or assistance in transfer between flights.

CATEGORIES: INF, SUBJECT-IAY
01 THURSDAY, JULY 19
02 ABQ 90F/32C 60F/15C PRFEL CLDY-20PERCENT CHOE OF RAIN
03 LAS 100F/40C 80F/28C SUNNY DAYS - FAIR NITES - UNDS 17/25MPH
04 LAZ 75F/27C 40F/15C SOME AM CLOUDINESS - SUNNY DAY - WARMER
05 PHX 100F/40C 75F/23C COMO TICON DRY
06 PIA 100F/40C 75F/23C SUNNY - WARM
07 RNO 85F/25C 45F/17C FAIR BUT SOME ISOLATED THUNDERSTORMS
08 TUS 100F/37C 70F/21C SUNNY AND WARM
09 10 11 12 13 14

SUNNY DAYS
FAIR/BUT
RAIN
FAIR-15/25MPH
FAIR
FAIR
FAIR-20PERCENT CHCE OF RAIN
Remember The Good Old Days

TONIGHT the Bob Banks Trio returns to the Happy Hour bandstand while Club manager Pat Corcoran and the staff serve a special seafood Bouillabaisse for the buffet. Next Friday sees Smoothie wired into the bandstand, barbeque ribs on the buffet. To reserve buffet tickets call the Club office, 265-6791, by midweek.

"THE GREAT NOSTALGIA" is what they're calling the big one this month. The event is set for Saturday, July 21, and starts with a veal cordon bleu dinner with the works at 6:30. Local radio personality Ken Dunnagen provides the music and show from 8:30 to 12:30. He plays all the old records and various performers pantomime to the music. Those who have seen this say it's great fun. Tickets cost $5.25 for members.

TEENAGERS disco to "Sounds Unlimited" on Thursday, July 26. Member parents should pick up tickets for their youngsters.

CANCUN TRAVELERS will meet at 7:30 Tuesday, July 24, for a post mortem on their trip and show movies and slides. Everyone is invited.

TRAVEL DIRECTOR Ed Neidel has packages to Europe, Hawaii, Mazatlan and Ixtapa. He'll be in the lobby tonight between 6 and 7 with the full scoop.

THE TWIN POOLS will be closed for recreational swimming at 7 p.m. Friday, July 20, and all day Saturday, July 21. The annex pool will be open from 1 to 5 p.m. on Saturday. The Coronado Aquatic Club is holding a competitive swim meet. You're invited to be a spectator.

SPEAKING OF POOLS, the twin pools and patio area are available for private party rental starting at 6 p.m. any evening of the week except Fridays. Check with the Club office for details.

Cigarette smoking may be more hazardous to your health than you think. A DeVaul University study on the effect of irritant air pollution on human aggression shows "that exposure to secondary cigarette smoke significantly increases aggression in both angered and nonangered subjects."

Events Calendar

July 13-15 — "Our Town," Corrales Adobe Theater, 8:30 p.m., 898-3323.
July 15 & Sundays through Aug. 26 — Free chamber music concerts by the Cimarosa Chamber Players, 2 p.m., Old Town Plaza.
July 16 — Lecture Under the Stars: "Solar Heating in New Mexico," J.D. Balcomb (LASL), 8 p.m., UNM Union Ballroom.
July 21 — "Trio Americana," music of North and South America, 8 p.m., Downtown Center for the Arts, 216 Central SW.
July 23 — Lecture Under the Stars: "Old Time Ranching in New Mexico," Stan Steiner, 8 p.m., UNM Central Mall.

THE UNITED WAY — Share Your Care is the name of this United Way agency, and its objective is to serve "...the frail elderly and dependent adults and their families." These young musicians performing for the group are Richard, Thomas and Andrea Chavez, the children of Ray Chavez (3155), while the older couple is another generation of Chavezes (Mr. & Mrs. I.F.), Ray's parents. The senior Chavez is a Sandia retiree, class of '61.