

Nuclear power: Where does science stand?

By PATTI KELLER
Staff Writer

Technically, the roots of the San Joaquin Nuclear Project reach back to World War II, when atomic power passed from the theoretical to the real world.

In practical terms, it had its beginning in the Atomic Energy Act of 1954, in which Congress committed the nation to the development of atomic power for maximum peacetime use.

Government and industry, largely with public funds,



since then have endeavored to bring that use to the American public, and did so as early as 1957 when the Shippingport, Pa., power plant began operation.

But nuclear power has spread relatively slowly, even as it's been hailed as the answer to the "energy crisis," to substitute for oil-fired plants which have become short of fuel. Of 58 plants are licensed for operation in this nation, and they provide a small portion of the nation's electrical power — about as much as the State of California alone consumes each year.

The power of nuclear energy results from the fissioning of atoms — splitting atoms with free electrons, which released more neutrons to split more atoms and release more energy. It's a relatively new technology; the first uranium atom was split in Germany in 1938.

It was the summer of 1942 that a small group of scientists convinced President Franklin Roosevelt that the most

rapid way to end World War II could be through an atomic bomb.

In what later was to be called "the greatest single achievement of organized human effort in history," the Manhattan Project produced the bombs which three years later fell at Hiroshima and Nagasaki and, indeed, are given historical credit for bringing the war to an earlier end.

The Manhattan Project is a fascinating story of a giant, secret military project involving more than 5,000 people under direction of the Army's Brig. Gen. Leslie R. Groves. Working first in laboratories across the nation, and later in a unified bomb laboratory created in the desolation of Los Alamos, N.M., scientists and engineers found their lives absorbed in the details of making the world's first such bombs.

The tasks were not simple. They involved everything from making the fuels — fissionable uranium and plutonium, neither of which are naturally found elements — to designing, assembling and testing the bombs. The technology for all these tasks had to be developed and the necessary materials acquired.

The details are told in an extremely readable book by Stephane Groueff, "Manhattan Project: The Untold Story of the Making of the Atomic Bomb" (in paperback by Bantam Books, June 1968). There appear some of the same names that remain prominent in today's nuclear technology: Edward Teller, Hans Bethe, Harold Urey, Glenn Seaborg, the late Robert R. Oppenheimer, the late Ernest Lawrence, the late Enrico Fermi, and firms like Westinghouse, Babcock and Wilcox Corporation and M. W. Kellogg Company.

Though they worked side by side in developing the atomic bomb, these men took opposing sides in development of the peaceful atom. Some of them remain among the leadership on either side of the increasingly intense nuclear controversy.

After the war came the move to harness the atom for peaceful purposes, born, some will say, out of the guilt of those who had created the atomic bomb. Whatever the motive, the efforts resulted in the Atomic Energy Act of 1954,

which established the Atomic Energy Commission. For 20 years hence the AEC administered scientific and financial forces for development and promotion of nuclear power.

A frequent comment from the nuclear industry today is that there would be no controversy over nuclear energy had it not had its beginnings in the atomic bomb, that the controversy is an emotional response to nuclear weapons.

But nuclear critics blame the Atomic Energy Commission itself for much of the controversy, citing its penchant for secrecy and deception.

The demise of the AEC resulted from its conflicting roles as promoter and regulator of the nuclear industry. In 1975, two new agencies replaced the AEC: The Nuclear Regulatory Commission, to regulate the industry; and the Energy Research and Development Agency, to research and develop all potential energy sources.

But nuclear critics remain suspicious of the federal government's role in the nuclear controversy, claiming the agencies still exist more for the benefit of the nuclear industry than to benefit the public.

About half the budget of the Energy Research and Development Agency is devoted to nuclear power, with the balance going to alternative sources.

Largely as a result of the lack of agreement in the scientific community, the peaceful use of the atom has not blossomed as rapidly as some government and nuclear industry leaders would like. The nuclear promise has become more of a nuclear battle, in a verbal, economic and political sense.

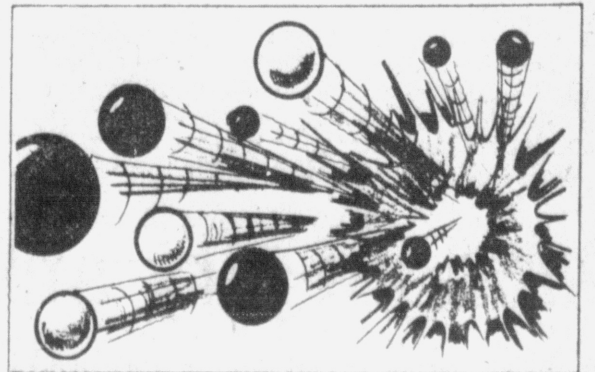
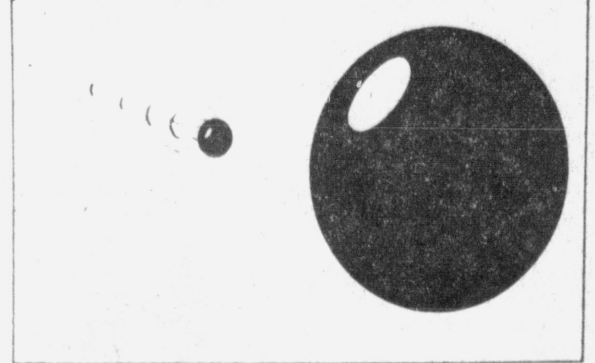
The controversy lies in what's simply called the "fuel cycle;" the specific areas of concern are:

The potential for a reactor core meltdown, in which the fission reaction would lunge out of control, melt the reactor core and emit radioactive gases to the atmosphere.

The disposal of radioactive waste materials, which remain radioactively "hot" for up to 250,000 years.

The safe transport of nuclear materials from fuel fabrication

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Fission — the splitting of atoms with neutrons to release energy — is the basis of nuclear power. A common example in science classes is the game of pool or billiards; a single cue ball is hit toward a rack of balls, which splits on impact, releasing energy in the movement of the balls. First discovered in 1938, fission has progressed from war to peacetime uses.—(Drawings by Mike Manion)

Technology lag in waste water cooling reported

By PETE DeARMOND
Staff Writer

The "state of the art" of agricultural waste water technology does not provide an efficient system for cooling nuclear power plants, according to a state water official.

John Boudreau, chairman of the thermal-electric water supply committee of the Association of California Water Agencies, speaking last night to members of the Water Association of Kern County, said "I think there's some confusion on the use of waste water . . . there's a tendency to lull us into a false sense of satisfaction with it."

Many Kern officials, particularly in the water and farming communities, have indicated they favor the proposed San Joaquin Nuclear Project near Wasco if agricultural waste water, rather than fresh water, is used for cooling.

Boudreau said ACWA is urging more studies on waste water plans. "Fresh water should not be used for cooling purposes except as an interim source pending the practical development of means for the use of waste water," he said.

Boudreau agrees with other waste officials that nuclear power plants should be built along the coast instead of inland where water for cooling is limited.

"Certainly power companies have enough problems of their own in siting nuclear power plants, but the question is, what are we going to do without water?" Boudreau said he favors nuclear plants as a power source, but he indicated several questions still surround the proposed \$5.2 billion plant near Wasco.

"I do not intend to say anything detrimental about nuclear power and I do not intend to say anything detrimental about the Wasco plant," he said.

Boudreau, manager of the Terra Bella Irrigation District, was active in forming a resolution adopted by ACWA supporting coastal sites for nuclear plants.

The resolution also encourages "power producers to utilize (agricultural) waste water . . . for cooling in order to minimize the use of fresh water for such purposes."

In response to questions from the Kern water association, Boudreau said the mineral content of ocean water would be better for cooling because waste water contains chemicals that make it "less conducive" for this purpose.

Boudreau said when the trend to place nuclear plants inland began about five years ago, power companies failed to grasp the strong competition for fresh water supplies.

"The power companies did not understand the problem at hand—that we already are 1½ million acre-feet short of water," he said.

But he emphasized "in no way is the association going to oppose the power companies in their effort to build nuclear plants"

Instead, he said, ACWA prefers to work with the companies to find the most feasible method of establishing nuclear power.

"Power companies are the first to admit they have a problem," Boudreau said. "California's water resources are not sufficient to provide the cooling water for all the power plant cooling needs that must be developed (by the state) to meet its energy needs in the next 25 years."

Boudreau also agreed with William E. Moore Jr., former president of ACWA, that his statements on problems in finding power plant sites shouldn't be misunderstood as opposition to nuclear power.

But he conceded there is little chance of obtaining coastal sites in view of the California Coastal Zone Conservation Commission's opposition to this move.

"Getting a plant on the coast might be extremely difficult if not impossible," he said. "But the difficulty would be lessened if people had some knowledge of our problems with water."

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Bakersfield College students cluster around plans for the school's new solar heating system. Shown are Michael Moser, Michael Rodeen, Mike Toland,

Anthony Cesero and instructor Fred Coon. Project is being partially funded through a \$2,000 grant from the school's innovations committee.

BC students to design, build solar heating system for lab

A plan to design and build a solar heating system for the Bakersfield College horticulture lab by BC students under faculty supervision will begin this month with a \$2,000 grant from the college's innovations committee.

"There seems little doubt that solar power will provide an integral part of our energy needs for the future," said Stanley Karp, project coordinator and physical science instructor.

"While the government is spending millions of dollars in research and development through the Housing and Urban Development Department, the

Energy Research and Development Administration and the National Science Foundation to develop solar energy capabilities for space heating, water heating, air conditioning and electrical generation, much of this development is still in the "Model T" stage and, from the standpoint of economics, we are dealing with a bright yellow Edsel."

The concept of solar energy is based on the "greenhouse effect," in which pipes with water are placed in a black cubicle covered with glass. The sun's light is trapped in the containers

and transformed into heat. The resulting hot water then is used as an energy source.

With public utilities having expressed an interest in the project, the college intends to use trade and industry apprenticeship students for the actual construction of the project and agriculture students for its operation.

"Bakersfield College is among the first, if not the first community college, to develop a solar energy study program. Energy economics is rapidly changing and sun power is more ac-

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Ramps get okay, but lack funds

It will cost an estimated \$370,000 to construct on and off ramps on the west side of Mt. Vernon Avenue at Freeway 178 (Crosstown Freeway).

City Planning Commission last night approved proposed plans for the ramps even though the question of financing the project remains unanswered. The plans approved by the commission and the cost estimates were prepared by the state Department of Transportation.

Calvin Bidwell, city public works director, said the plans involve no additional purchase of right of way property. Property on which the proposed ramps would be constructed is owned by the state. Two previous state plans would have required purchasing more land, Bidwell said.

The estimated \$370,000 includes installation of traffic signals at Mt. Vernon Avenue and the proposed off ramp. Ramps on the east side of Mt. Vernon were constructed when Freeway 178 was first developed. The ramp directing traffic west from Mt. Vernon toward downtown Bakersfield would begin at Height Street which now carries two-way traffic.

Height Street would be converted to one way traffic from Mt. Vernon to Sunny Lane. At this point the traffic would enter into the off ramp and Height Street would return to two-way traffic, Bidwell said.

The state last year approved the city's proposal to construct the ramps but warned the project would have to be financed with local funds. Financing the project is being studied by a special City Council committee comprised of Donald Rogers and J. M. Christensen.

Rogers has said the county should share in the project cost since Mt. Vernon Avenue is used by county and city residents. It is possible the state Highway Commission could have some discretionary funds which could be used to finance part of the project, Bidwell said. Bakersfield is represented on the

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Many down with flu, but it's no epidemic

Have you been feeling achy? Tired and rundown? Sniffling a lot? You have quite a bit of company, according to County Health Officer Dr. Owen Kearns, but not enough to constitute even a hint of an epidemic.

"We've been warned from other areas about a Victoria strain of 'flu' virus," he said, "but we haven't identified it here yet, although we have had reports of a few number of respiratory illnesses and I do hear about a lot of colds."

Kearns said the problem seems to have been most acute in the Mojave area, where schools have reported an absenteeism here of more than 10 per cent. Schools in the Bakersfield area have not been similarly affected. "So far, there's been no sharp increase in absenteeism here," the physician said.

As to cause of the "non-epidemic" he won't hazard a guess, except to say, Evidently it's not related to our dry weather spell or pollen."

Now that you know there's no "flu" epidemic, but you still feel under the weather, what should you do about it?

"Drink plenty of fluids, get a lot of bed rest at home and don't try to shake it off by going to work," Kearns advised.

Minority 'favoritism' irks job test takers

Kern County's effort to encourage minority residents into its Civil Service jobs managed to rankle many of those taking tests for two new positions last night and tonight.

The jobs in question are for child support interviewers and child support investigators, both of which will come under the county district attorney's office. Both are designed for tracking down runaway parents and making them pay for the support of their children.

Many of the applicants for the position are employed by the county welfare department. They complained about the county Personnel Department's handling of these openings.

Specifically, they balked at two meetings that the Personnel Department ran to inform minority people about the positions. They said the county was giving a select group special information about the exams. (The exam for the interviewers was given last night; the one for the investigators will be given tonight.)

There were 180 persons who took the test for interviewer, a job with a salary range of \$749 to \$914 a month. For the investigator job, which pays from \$1,015 to \$1,239 a month, 212 applicants have been approved to take the test.

The Kern County Employees Association, union for Welfare Department workers, investigated the

complaint and found the county probably was not acting improperly.

Edwin A. Buck, director of personnel, said that the meetings, which were held Jan. 20 and 21 at Bakersfield College Downtown Center, were "a part of our affirmative action program."

The affirmative action program is about three years old. It was approved by the Board of Supervisors and is an outgrowth of federal civil rights legislation.

Charles Boxwell, senior field representative of the union, said, "There apparently is nothing illegal about what the Personnel Department did. The morality of it is another question."

At the meetings the positions were discussed and general information about the examinations was covered, according to Buck. He denied specific exam questions were discussed.

However, at the Jan. 21 meeting, at which the head of the child support division in the DA's office, Pat Haenelt, spoke, copies of laws that deal with the new positions were passed out. Certain specific passages were checked, circled and starred.

Boxwell said that if the tests contain questions from the singled-out material the union would file a

formal protest. He said, however, that the material may be so general in nature as to provide no special help to those who attended the meeting.

"We'll just have to wait and see what's on the exams," he said.

The Personnel Department said that the meetings were open to the public, but admitted that except for about 40 people to whom it sent written invitations, it did not inform anyone about them.

Buck said that this was a mistake. He said the next time a similar situation comes up the meetings would be publicized.

Among the Welfare Department workers who complained about the meetings were one black woman and one part-Indian woman who said that they had not been notified about the meetings despite their minority status.

Peter Lomely, affirmative action officer and the one who arranged the meetings, said that simply being part of a minority was not enough to get a person an invitation.

"The invitations were sent only to clients of the affirmative action program," he said. "That is, to minority people who have filed with the program and let us know they were interested in getting better positions with the county. Otherwise we would have no way of knowing every minority person who works for us."