

Breeder reactor: 'New sense of urgency'

"A new sense of urgency" in the development of nuclear breeder reactors, with particular emphasis on the liquid metal fast breeder reactor, was called for this week in a report by a subcommittee of the congressional Joint Committee on Atomic Energy.

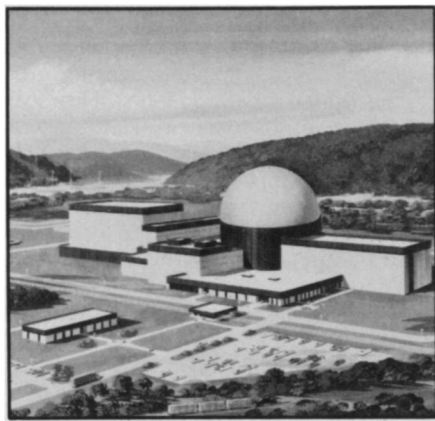
Speed is necessary, the report suggests, because the "assured" and "potential" low-cost uranium reserves of the United States, estimated at 3.6 million tons by the Energy Research and Development Administration, will otherwise be fully committed to conventional reactors by the mid-1990's, and "no additional reactors of this type could be built after this date" unless greater reserves are found. The breeder concept, according to the report, would give those 3.6 million tons an energy potential equivalent to 126 million tons of low-cost uranium, "an amount of nuclear fuel sufficient to supply nuclear powerplants for centuries."

"The time has come," the report says, "to end the discussion over whether or not this nation should have a breeder research and development program." The emphasis of future federal studies on the matter "should not be on the issue of 'should we do the job,' but on 'how best to get the job done.'"

The report takes an optimistic tone regarding the availability of solutions to safety concerns. In the case of reactor safety, "the subcommittee notes with satisfaction . . . that no credible situation or accident has been hypothesized to date for which adequate design and safety features are not under consideration." The panel recommended that ERDA pursue waste management studies "vigorously," although "the technology required . . . is largely in hand and . . . the critical delays being experienced today are primarily administrative and regulatory."

Established as the Ad Hoc Subcommittee to Review the Liquid Metal Fast Breeder Reactor Program, headed by Rep. Mike McCormack (D-Wash.), the group held several months of hearings leading up to the report, which also included testimony on the toxic effects of exposure to radioactive material. Although safe-handling standards must be maintained, the report notes, "there are no cases on record of human lung cancer attributed to exposure to plutonium. . . ." Furthermore, although about four tons of plutonium 239 have fallen on the earth from atmospheric weapons tests, "there is no indication that this plutonium deposition has caused any untoward health effects." The subcommittee thus endorsed "the high standards of plutonium protection that have been maintained in the past" but made no reference to tighter future standards beyond the continuation of biomedical research efforts.

It was estimated by ERDA that research



Clinch River Reactor: Congress pushes.

and development for the liquid metal fast breeder reactor will cost about \$10.6 billion, and the panel reported a consensus from its study that this is a "reasonable estimate, although a few respondents voiced strong feelings that previous inability to meet cost estimates meant the figure would go much higher." The Clinch River Breeder Reactor, for ex-

ample, a demonstration project to be built in Tennessee, was predicted by the Atomic Energy Commission in 1972 to cost \$699 million. Last March, the report acknowledges, ERDA submitted "revisions to that arrangement" that included a new cost estimate of \$1.736 billion, nearly 2.5 times the previous figure.

The subcommittee recommended that serious consideration be given to the possibility of establishing federally owned "energy centers" as locations for a variety of nuclear operations such as storage of fissionable materials, fuel processing and enrichment, temporary waste storage and research. Such centers might be able to reduce risks by offering decreased transportation distances, more effective physical security and better control of "routine releases" and waste materials. A survey by the Nuclear Regulatory Commission of possible sites for the centers was submitted to Congress on Jan. 19.

The subcommittee estimated that by the year 2000, the U.S. demand for energy will exceed the projected production of present sources by the equivalent of about 55 million barrels of oil per day, "about double what we are capable of producing in this country today." □

Preventing breast cancer relapses

The greatest progress in curing cancers in recent years has come in successfully combining different modes of therapy—surgery, drugs, X-rays, immunotherapy—so that together they are far more effective than if used alone (SN: 1/11/75, p. 26). A team of Italian scientists has now used a combination of three drugs to drastically reduce breast cancer recurrences in women who've had radical mastectomies. They report their findings in the Feb. 19 *NEW ENGLAND JOURNAL OF MEDICINE*. An editorial in the same journal hails the approach "as a work of monumental importance."

Gianni Bonadonna and his colleagues at the National Cancer Institutes in Milan gave 207 women who had had a radical mastectomy for breast cancer a combination of three drugs—cyclophosphamide, methotrexate and fluorouracil. One hundred-and-seventy-nine patients who had had a radical mastectomy for breast cancer did not receive the drug regimen, thereby serving as controls. After 27 months, 24 percent of the control subjects experienced breast cancer relapses; only 5.3 percent of women receiving the combination chemotherapy did. Long-term drug therapy was also minimally toxic to the patients so that they could receive the drugs in large dosages.

"Our results," the investigators conclude, "appear promising since they are translating into clinical evidence what has been strongly supported for years by animal model systems." They caution, however, that "not enough time has yet

elapsed to indicate whether the difference in the rate of recurrence can also affect the rate of survival. . . ."

In the editorial, however, James F. Holland of the Mount Sinai School of Medicine in New York City is totally optimistic about the combination drug treatment. "The study from the NCI in Italy," he declares, "shows the value of both medicine and surgery in cancer therapy. How many hundreds of thousands of lives can be improved or indeed saved by application of the present information in the coming decade?" □

Immunizing against pregnancy

Investigators are taking a number of ingenious approaches to designing new kinds of birth control. They are exploring, for instance, the possibility of giving specific hormones to turn off or impede conception; of interfering with specific enzymes that might be critical for conception; of turning off sperm production with heat, infrared rays and ultrasound (SN: 2/10/73, p. 93; 5/1/74, p. 309). Now a team of New Delhi investigators is looking into the possibility of immunizing women against a hormone that is essential for pregnancy.

Human chorionic gonadotropin (HCG) is a hormone that is synthesized early in pregnancy—six to eight days after fertilization of the egg. The hormone plays a