ABM DECISION

Coming to a head

Last week, as the controversy over deployment of an antimissile system boiled over and the President said he needed more time to decide what to do about it, the arguments on both sides were the same as they had been for a year.

But the situation was different. A year ago the nation had been preoccupied with the war in Vietnam. Now, with talks at least taking place in Paris, opponents of the ABM could concentrate on what they regard as an escalation in the nuclear arms race.

If President Nixon decides to continue last fall's halt in the deployment of the Sentinel ABM—he had promised a decision early in the week, then deferred it—he will be heeding the advice of all four former Presidential Science Advisers, as well as both Republican and Democratic leaders in Congress and a number of cities which have literally kicked the ABM out of their own back yards.

Most scientists have grave doubts about deploying the Sentinel system now, as they have had for many years. As Jerome B. Wiesner, MIT provost and adviser to Presidents Kennedy and Johnson has declared, many believe it just won't work.

And Dr. Hans Bethe, Nobel-winning physicist who has catalogued the many technical defects of the system, reiterated his doubts that it could be effective even against Chinese missiles.

Through the use of decoys to fool the defensive missiles, or chaff or high-altitude explosions to blank out their radar, even a primitive Chinese ballistic missile could penetrate the Sentinel shield, Dr. Bethe wrote a year ago (SN: 3/23/68, p. 279).

Those arguments hold equally true today, he says.

Wiesner and two former Eisenhower advisers believe that building any ABM system would lead to arms escalation.

The decision to build the Sentinel ABM was announced by former Secretary of Defense Robert McNamara in September 1967, after years of decisions to defer earlier systems. McNamara chose a relatively light system oriented to protect the U.S. against Chinese missiles expected to be operational in the mid-1970's. This is the so-called thin system, then estimated to cost about $5 billion compared to the thick system that would cost from $40 billion to $60 billion.

McNamara, in effect, set forth very good reasons for not deploying the Sentinel system, then bent under heavy Congressional pressure and advocated building it anyway.

Now, with the shoe on the other foot, and Congress becoming the focus for opposition, a McNamara successor, Secretary Melvin R. Laird, is leading the forces for deployment as he once did from Capitol Hill.

The most often used argument in favor of Sentinel is that all it costs is money, of little consequence if lives can be saved. For a thin system the estimated number of lives saved in the event of attack range from 20 million to 40 million, while the thick system ranges from 80 million to 120 million.

The consensus of scientists is that any proposed ABM system nourishes the illusion that an effective defense against ballistic missiles is possible.

An ABM is "not an ultimate weapon but an ultimate absurdity," Dr. George Kistiakowsky, former President Dwight D. Eisenhower's science adviser, told the Senate Subcommittee on International Organization and Disarmament.

His view is also supported by Dr. Donald Hornig, President Johnson's science adviser ,who terms the thin deployment a "downpayment on a continuing system." He says he advised against the McNamara deployment move at the time.

All of the scientists testifying at the Senate hearings and at those of the House Foreign Affairs Subcommittee agreed that a delay of a year or more in deploying the Sentinel would not jeopardize the security of the United States. Most doubted it should ever be built.

Dr. James R. Killian, chairman of the board of Massachusetts Institute of Technology and also a former Eisenhower science adviser, urged that the best way for the U.S. to determine its position on deployment of Sentinel is to establish a national commission that will investigate "all strategic weapons."

Members, Dr. Killian proposed, should serve full-time for several months, and be free from the vested interests that constitute the military-industrial complex that pressed President Kennedy so hard to deploy a Sentinel precursor, the more limited Nike Zeus.

Dr. Herbert York, director of research and engineering in Eisenhower's Defense Department, and now professor of physics at the University of California in San Diego, agreed with Dr. Kistiakowsky that the Sentinel ABM offers a false hope. He charged it is an extremely dangerous alternative if it diverts attention from the real goal: A solution of armaments problems in the only place it can be found—a political search for peace combined with disarmament measures.

EARTHQUAKES

More than prayer

Samuel M. Sharkey

Alaska quake caused hillside to slide out from under a suburb of Anchorage.

Earthquakes are an ancient human terror that has so far resisted human technology. Fire can be contained and extinguished and floods controlled. But about all that can be done to prevent earthquakes, now as in the 16th century, when Archbishop Thomas Cranmer wrote, ". . . from earthquake, fire, and flood . . . Good Lord, deliver us." is to pray. Unlike storms, floods or forest fires, earthquakes give no warnings. For those affected there are neither shelters nor evacuation to safe ground.

"We have as yet no means of forecasting damaging earthquakes," says the Committee on the Alaska Earthquake of the National Research Council. "Currently promising research involves careful measurement of ground movements and associated changes in local magnetic, electrical and gravity fields; studies of earthquake origin and mecha-

nism; investigations of crustal structure and its strains . . . and analysis of the continuous seismic record for precursory features."

People are thinking about preventing earthquakes too, though no one can do it yet. One current idea is to inject water into dangerous seismic faults so as to release accumulated stress in a series of small shocks instead of one big jolt (SN: 2/8, p. 138).

Meanwhile, says the committee, a number of things can be done to mitigate the damage and loss of life that earthquakes cause. The committee's recommendations are embodied in a report issued to coincide with the fifth anniversary of the Alaska disaster of March 27, 1964, which measured between 8.4 and 8.6 in the Richter scale, almost matching the record of 8.9.

A major hindrance to the adoption of a national program to minimize earthquake damage, as the committee sees it, is getting people to face the danger.

"The public mind tends to regard the hazard from earthquakes as largely confined to only two states," Alaska and California. Yet there have been severe earthquakes in many parts of the country. "A repetition of the 1811-12 New Madrid (Mo.) earthquakes might well cause more deaths and greater damage than a repeat of the 1906 San Francisco earthquake," the committee remarks. In fact, on Nov. 9, 1968 a fairly hard shock (5.5 on the Richter scale) was centered in Hamilton County, in southern Illinois, in the same general area as that affected by the New Madrid shocks.

Even in areas where seismic hazard is well-known, people refuse to think of it. The council found that though earthquake insurance is widely available in the United States, in California only five percent of the property insured against fire also carries earthquake insurance. Ironically the committee surmises that if earthquake insurance were more used, it would probably be removed from the market, since insurance companies could not stand concentrated losses. A more widely based system of earthquake insurance should be established, the committee feels.

The committee recommends formation of a Federal task force to evolve a program for reduction of losses from "sudden-impact environmental hazards," including earthquakes, hurricanes, tornadoes, floods, volcanic eruptions, tsunamis and major landslides. Recently, also, a 10-year, $220 million program of research in earthquake prediction, prevention and damage mitigation was proposed by the Federal Council for Science and Technology (SN: 2/1, p. 113).

The National Research Council committee recommends development of improved earthquake resistant designs for all kinds of structures. It wants improvements in regulatory systems connected with construction.

"Building-code requirements for major structures in seismic areas should be expressed in terms of dynamic behavior of the structures rather than in terms of the currently used equivalent static forces," it says. Furthermore, it wants periodic surveys of old structures, especially dams, reservoirs and storage tanks.

Attempts to design earthquakeproof buildings have a long history. Most depend on putting some kind of shock absorber between the foundations and the unsteady ground. Such was the floating cantilever construction that Frank Lloyd Wright used in the Imperial Hotel that successfully withstood the Tokyo earthquake of 1923. Such also is the more recent suggestion of Mexican engineer Manuel Gonzales Flores, who proposes resting building foundations on mattresses of steel balls (SN: 10/19, p. 400).

Collection of seismic and geophysical data during and between major earthquakes is also very important, the committee says. It would like emergency personnel and a system of quick funding to be available to facilitate studies of the effects of major earthquakes as soon as they happen. One of the problems encountered in studying the Alaska disaster was that granting agencies could not come up with quick money for work that did not quite meet their granting definitions or conform to their set missions.

Earthquake hazard maps should be made for all areas and used in the planning of subdivisions, zoning and major construction, the committe says.

The tsunami warning system needs improvement by way of better recording, faster transmission and better analysis of data. As it stands, the system gives too many false alarms, and people are tending to disregard the warnings it gives.

The committee also endorses research aimed at a method of forecasting earthquakes "that would allow us to issue probabilistic warnings like those that constitute so-called modern weather forecasts."

But it urges caution in the application of such a method. "Forecasting would be welcomed by scientists and engineers, but for the general public in a seismic area it is not clear whether the ability to forecast earthquakes would solve more problems than it would create." The report tells of an earthquake warning for an area in Japan where widespread anxiety and damage to the local economy resulted. ◇