

political consequences for Nixon if he goes ahead with the test or if he cancels it.

Of course a huge earthquake immediately after the test, particularly if it were followed by a damaging tsunami crashing against the shores of California, Alaska, or Hawaii, would hurt Nixon's chances for reelection in 1972. Most of the underground nuclear blasts in Nevada have triggered natural earthquakes that are one or more magnitudes less in intensity than the shock wave from the blast itself. And for the past few years, seismologists have suggested that an underground nuclear test might possibly spark a chain of events leading to a huge earthquake. The report of the Ad Hoc Panel on the Safety of Underground Testing, which was prepared for the President's Office of Science and Technology in 1968, stated that such a possibility was greater for tests exceeding 1 megaton and for tests conducted in the Aleutians because of that area's intensive natural seismic activity. The Panel thus concluded that "the need for these tests as planned should be compelling, if they are to be conducted in the face of the possible risks that have been identified."

The AEC's environmental impact statement declared it to be "highly unlikely" that Cannikan will trigger a huge earthquake, and "even more unlikely" that it will set off a damaging tsunami. In defense of these claims, the AEC argued that the 1969 Amchitka test did not set off any earthquakes with more energy than the blast itself. In fact, the 1969 test generated fewer aftershocks than were expected on the basis of the AEC's experience in Nevada.

Even with their one successful blast on Amchitka, however, the AEC is still dealing with an area where the lack of data makes predictions impossible. James Brune, a seismologist at the University of California, La Jolla, told *Science* that the 1969 test "shows that not every big explosion will trigger an earthquake." He added that "everyone agreed from the beginning that there was only a slight chance that it would happen."

Similar considerations apply to the possibility of leakage. Pointing to the AEC's record at the Nevada test site, where 67 out of 230 underground tests have leaked at least small amounts of radioactivity, critics of the test contend that a distinct possibility exists for a leak from Cannikan. While the AEC

admits to the possibility, the environmental impact statement terms it an "unlikely event." Officials of AEC point out that none of the leaks in Nevada occurred with tests over 100 kilotons.

In addition to threats to Nixon's political future from earthquakes that might be triggered by the blast, the Undersecretaries Committee must consider the possibility that a coincidental natural earthquake might follow the blast on Amchitka and be attributed by the public to the AEC test. Three weeks before the 1969 test, a 6.6 Richter scale earthquake rocked Amchitka, and AEC Chairman Glenn Seaborg breathed a public sigh of relief that the quake hadn't taken place after the test.

#### Possible Senate Battle

But perhaps more significant to Nixon than the possibility of natural calamities following the test is the possibility of a fight in the Senate before the test. The AEC authorizations bill, which will be reported out of committee to the Senate floor sometime in the next few weeks, contains \$20 million in additional funds for the Amchitka test. And several senators are willing to support an amendment to delete those funds. As part of their study of possible political consequences of the test, the Undersecretaries Committee has sent a State Department representative around the Senate to sample opinion on the proposed amendment to delete funds for the test.

So far, the movement against the Amchitka test has been rather low key, with only Senators Gravel and Hubert H. Humphrey (D-Minn.) speaking against the test. "We don't want to put so much pressure on Nixon that he can't cancel the test," said an aide to Senator Gravel. "Let him be a hero for a change."

Although it is unlikely that the opponents of the test have enough votes to block the appropriation, a Senate squabble could prove embarrassing to the Administration. The Administration would be particularly sensitive to such a controversy because other provisions of the AEC authorization, including the fast breeder reactor, will also be under attack.

Besides the domestic politics, the decision of whether to continue the test necessitates international considerations. The governments of Canada and Japan have each filed notes of protest against the test, just as they did

prior to the Milrow test in 1969.

Franklin A. Long, vice president of Cornell University, testified prior to the 1969 test that "There is a grave risk that . . . the unilateral U.S. action of performing large nuclear tests on the very brink of the Pacific Ocean will encourage anti-Americanism in Japan and Canada and . . . our national security will be *decreased*, not *increased*." Long told *Science* that "nothing has happened to change my viewpoint." At the time of the 1969 test, 18,000 Canadians closed off a border crossing with the United States, and more demonstrations are planned if Cannikan takes place.

Moreover, some observers believe the test could adversely affect the Strategic Arms Limitation Talks. FAS Director Stone said in his testimony at the hearings in Alaska that "none of the alternatives for limited ABM's being discussed at SALT require the basic Spartan missile."

Nixon has until the middle of September to make the final decision on whether to go ahead with the test. But the report of the Undersecretaries Committee is due for completion by the end of June, and the President's decision should be announced shortly thereafter.

To keep up the pressure against the test, a number of environmental and peace groups, including the Wilderness Society, the Committee for Nuclear Responsibility, the Sierra Club, Friends of the Earth, and the Federation of American Scientists, have formed the Coalition Against the Nuclear Test in Alaska. Still giddy from their victory in eliminating the Supersonic Transport, the environmentalists are confident that they can stop the blast underneath Amchitka Island.

In defending the need for the 5-megaton test, the AEC maintains that there is little danger and that the weapon is vital to America's national security. But, in matters of nuclear energy, the public appears less and less willing to accept the AEC's word as proven fact (see page 1215). The cancellation of the Amchitka test could serve as the first indication, albeit slight, of a change in America's weapons policies.—ROBERT J. BAZELL

*Erratum:* In "Developmental behaviors: delayed appearance in monkeys asphyxiated at birth" by J. A. Sechzer *et al.* (19 Mar., p. 1173), the last two lines of column 1 and the first five lines of column 2, page 1175, should read "Deficits in learning and memory (10, 11) when compared with the establishment of these developmental behaviors (although significantly delayed) suggest that brain damage by neonatal asphyxia can result in a degree of dissociation. . . ."