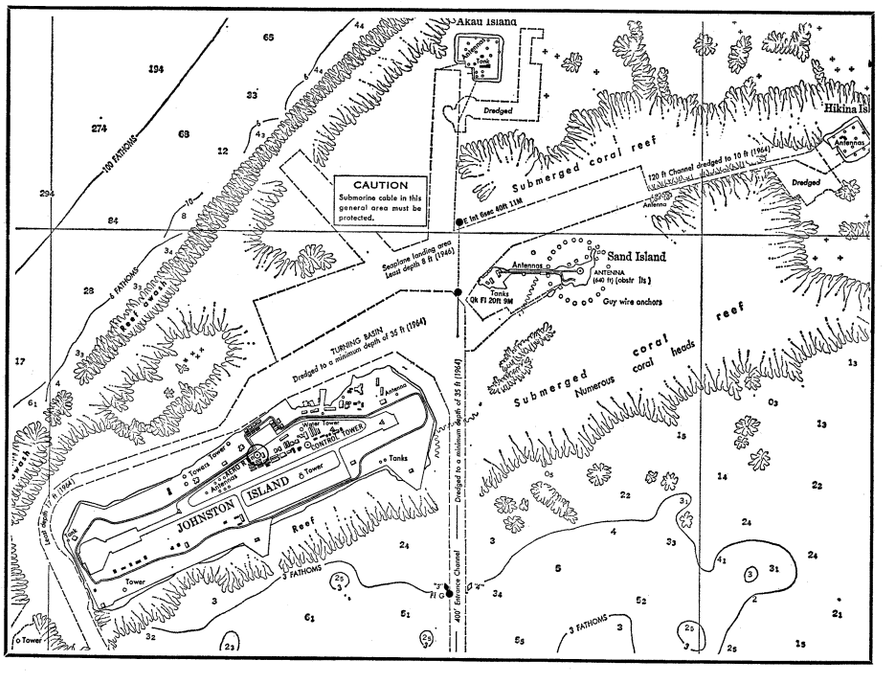
Upgrading a test-ban safeguard

Readiness for atmospheric testing takes more money in the age of the ABM



Johnston Island will be refitted to test war by missile, instead of aircraft.

The biggest influence for U.S. ratification of the nuclear atmospheric test ban treaty in 1963 was President Kennedy's assurance to Congress that four safeguards would keep the U.S. from falling behind in nuclear technology.

These included "comprehensive, aggressive and continuing" underground test programs, laboratory research and an improved ability to detect Russian tests and keep abreast of Sino-Soviet nuclear development.

The fourth safeguard was the development of the ability to resume atmospheric testing in short order, in the event of Russia's breaking the treaty or if the tests should be deemed "essential to our national security."

Jan. 1, 1965 was chosen as the date by which the U.S. was to be capable of resuming stockpile and equipment tests in as little as two months, tactical nuclear exercises in two to three months, developmental tests in three months, full-scale tests of effects of blast and radiation in six months and the most complex studies, such as reentry vehicle vulnerability, in nine months.

This responsibility has been borne jointly by the Atomic Energy Commission and the Defense Department. In the two years following the signing of the treaty, they together spent almost $300 million constructing facilities in the Pacific: bomb delivery equipment on Johnston Island, air bases and laboratories on Hawaii, personnel and logistic facilities on Oahu, a sounding rocket launch base on Kauai and a research station on Maui. The usable area of Johnston Atoll was more than tripled by a massive dredging and filling program, from 210 to 640 acres.

Yet all of this was but an elaborate waiting game, staffed by only a fraction of the manpower that would be used if atmospheric tests ever came out of mothballs. Following the initial construction, the AEC-DOD support dropped to $60 million for fiscal 1966; by fiscal 1969 it was down to $32.5 million and the budget left with the new Administration by President Johnson called for another cut of about 10 percent.

Now the downward trend appears likely to reverse. And the principal reason, which has popped up as an influence in a wide variety of Federal programs this year, is the antiballistic missile.

So far, much of the effort put out to keep the U.S. ready to set off nuclear bombs in the atmosphere again has been devoted to bombs delivered by aircraft. Studies have been made at low altitudes of the earth's magnetic field and atmospheric characteristics, and in every year from 1965 through 1968 a full-scale air-drop test was conducted, involving thousands of people and specially instrumented aircraft, sounding rockets and ships. Instead of bombs, nonexplosive bomb cases were dropped, packed full of devices to simulate the magnetic effects and radiation of a nuclear blast.

Atmospheric testing is still a dirty word. But Congress is not about to abandon the U.S. ability to pick up again at the drop of the first Soviet treaty violation. Now, however, DOD and AEC planners feel that this ability, called the National Nuclear Test Readiness Program, needs some up-dating, largely to encompass the detente between ballistic missile and ABM.

As a result, President Nixon's budget (SN: 1/25, p. 89) calls for a 44 percent increase, to $22.7 million, in AEC funding for the program, and a similar boost for the Defense Department.

One primary goal of the increase is described as "full proof of the survivability of hardened reentry vehicles when they are subjected to a realistic nuclear environment." In other words, making sure that U.S. nuclear-tipped missiles can survive near misses in flight from a Soviet ABM.

A second goal is to learn more about the effects on an ABM radar guidance system of a high-altitude blast nearby. Some researchers believe that setting off a high-altitude nuclear blast over a target ahead of incoming missiles could so confuse ABM guidance systems as to make them useless.

The other major task is to gather the best possible data, short of actually setting off atmospheric blasts, on the electromagnetic fields created by both high- and low-altitude nuclear explosions. This could have vital bearing on guidance system design for both offensive and defensive missiles.

Other parts of the revised program include evaluation of the effects of cratering, ground shocks and debris on hardened missile installations, and of air burst and shock effects on antisubmarine warfare and ship structures.

Program officials have been preparing for these changes since 1967, and in fact have been so satisfied with U.S. air-drop test capability that a simulated bomb test scheduled for last fall was not even run. Plans for this fall are not yet firm, but the chances for a missile-oriented testing series are good.