

MAJOR ISSUES IN THE TEST BAN DEBATE

I. How necessary was it for the nuclear weapon powers to test a nuclear explosive before building a weapon stockpile?

The first nuclear test explosion was considered indispensable for verification of the feasibility of achieving a large explosion by fission. The material used was plutonium. However, the uranium fission device exploded over Hiroshima, which contained a simpler mechanism, was not tested before being used; such was the scientists' confidence in the correctness of its design. It can, nevertheless, be argued that the use of the bomb was in itself a test. Indeed, the United States possessed no more than two atomic bombs when it decided to employ them in war. Even more essential was the testing of a thermonuclear device, for it is held impossible otherwise to gain confidence in the construction of a fusion bomb. Only after successful tests did the United States start manufacturing nuclear weapons for its stockpile. States which later joined the nuclear "club" acted similarly.

II. Why were further test explosions needed after nuclear weapons had been developed manufactured and stockpiled?

NEW WEAPON DESIGNS

Further testing was required primarily to validate refinements in the design of weapons. It was also necessary to achieve the greatest possible efficiency and economy in the use of fissionable and fusionable materials and, at the same time, make the weapon as-