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Nuclear Weapon Testing Limitations and International Security

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For over 50 years stopping nuclear weapon tests has been sought to support achieving international security without nuclear weapons. Testing is the critical path beyond primitive fission devices, e.g. to develop thermonuclear weapons, reduce weight and volume and increase yield. The 1958 Geneva Conference of Experts considered ways to verify a test ban. With then-limitations on seismology, and lack of in-country monitoring and on-site inspections, the 1963 Limited Test Ban Treaty prohibits testing only in the atmosphere, outer space and under water, and is verified by National Technical Means. The US and USSR agreed to a limit of 150 kilotons on underground explosions in the 1970s-80s. The 1996 Comprehensive Nuclear-Test-Ban Treaty bans all nuclear explosions. Its International Monitoring System seismic, hydroacoustic, infrasound and radionuclide sensors is being used, and has easily detected testing by the DPRK. On-site inspections will be available under an in-force Treaty. A 2012 National Academy report concludes that cheating attempts would not undermine U.S. security, and the program for monitoring and extending the life of US weapons has succeeded since US testing ceased in 1992.