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Need the U.S. resume nuclear weapons testing?

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The United States has not tested a nuclear weapon since 1992. Nuclear weapons are very complicated devices and have many possible failure modes. The U.S. has invested many hundreds of millions of dollars and many thousands of man-years in ensuring the safety and security of the stockpile. Are these efforts sufficient? Do we understand how nuclear weapons work—and decay—sufficiently well to preclude the need for further testing? This presentation will examine how nuclear weapons work, describe possible failure modes, and explore various technologies and techniques used for certifying nuclear weapons. The presentation will also explore what, if any, useful information would likely be gained from a nuclear weapon test. Finally, the presentation will examine the statistics of small numbers to determine how many tests would likely be needed to reveal complicated problems with the arsenal.