Advanced Concepts Stockpile Stewardship and Nuclear Testing

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The Paths to Nuclear Testing

- Safety and Reliability
  - Unable to meet security needs
  - Performance requirements set too high
- New Nuclear Weapons
  - Test new physics package
  - Validate weapons effects
- Political Need
  - Reaction to foreign testing

Safety and Reliability (Stockpile Stewardship)

- Take care not to create problems through many small but compounded upgrades
- Set long-term goals based on security needs
  - Given that the current stockpile is not optimized to the current security environment, what would the security impact of significant “problems” be?
  - Surveillance capabilities should not dictate performance requirements
- What would it take to fall back on the “remanufacture” option?
  - Is there expertise we need to capture now?

New Nuclear Weapons (Advanced Concept Initiatives)

- Advanced concepts that don't need testing
  - Robust Nuclear Earth Penetrator (RNEP)
  - "Low-Yield Weapons"
  - Delivery system modifications
- Advanced concepts that might need testing
  - Agent Defeat Weapons
- All of the above
  - Long shelf-life bombs

Agent Defeat Weapons

- Capabilities are very limited
  - Can they neutralize all dispersed BW agent?
- If they are pursued, will we trust computer models and HE simulations?
  - Computer models: Very difficult to incorporate mixing, radiation, heat
  - HE simulations: Impossible to simulate combined effect of heat, radiation
- Most likely, nuclear testing would be desired
  - Goal is to quantify weapon effects rather than to "test" weapons *per se*

Long-Lived Bombs

- Good for stockpile stewardship
  - Long shelf-life obviates any need to test
- Bad for stockpile stewardship
  - Would tests be needed for validation?
  - Negative message about current stockpile
- Questions for study
  - What could be done without testing?
  - What minimum performance would be desirable?

Direct Impact of U.S. Tests

- Provides short-term political cover for others to conduct tests
- Unlikely to push true “enemies” to test -- they would do so independently.
- Russia and China may feel a “need” to test
  - Opportunistic test more likely
- India and Pakistan will not feel direct pressure, but China could start a chain
- Friends are unlikely to respond “tit-for-tat”

Impact on the Regime?

- Would U.S. testing sap support for strong nonproliferation measures?
- Many leaders will support strong measures regardless, seeing them as critical regardless of U.S. behavior
  - Populations likely to react differently
- Depends on the context
  - "Farewell" tests before CTBT ratification (certify robust design, remanufacture line) would have less impact than tests conducted in direct defiance of nonproliferation norms

Others First?

- Too much thinking about a breakdown in the testing moratorium focuses on U.S. action -- what about others?
- North Korea, Iran
  - Huge blow to regime for reasons having little to do with testing
- India, Pakistan
  - Impact on regime depends on response

Others First? (2)

- Russia
  - Slightly weakens norm for established states against testing (moderated by Russian weakness)
  - Should not provoke U.S.; would it provoke China?
- China
  - Weakens norm for established states, especially since the U.S. might respond
  - U.S. response could have significant impact on eventual fallout from Chinese tests
  - What is U.S. strategy if this happens?