# Impact of CTBT

**The Comprehensive Test Ban Treaty (CTBT) bans any nuclear weapon explosion or other nuclear explosions**

- **Constrains the development of new-design weapons**
  - Will result in some loss of confidence in the nuclear weapons stockpile
- **The ability of the US to live with a ban on nuclear testing depends on having a vigorous Stockpile Stewardship Program (SSP).**
  - Guard against aging-related problems
- **The SSP is designed to:**
  - Provide the capability to survey and assess the stockpile for problems
  - Replace weapons components as needed
  - Certify the rebuilt weapons

**(CTBT) has reduced our flexibility and options to meet future nuclear deterrent requirements**



The CTBT prohibits nuclear explosions. In the past, the nation relied on full-scale integral nuclear testing to ensure the safety, reliability, and performance of our weapons. Furthermore, we relied on nuclear testing to ensure that our systems continued working as they aged.

The CTBT will constrain treaty-compliant nations from making significant advances in nuclear weapons.

Our ability to certify modifications, such as a life extension refurbishment of the enduring stockpile, depends on the success of the Stockpile Stewardship Program (SSP). The success of SSP, in turn, depends on a competent and motivated cadre of nuclear weapons experts, the accelerated strategic computing initiative (ASCI), new experimental facilities, infrastructure improvements, archiving, and funding.

# Outline: Drivers of, and limits to, change in a test-constrained nuclear stockpile

- The Context
  - The changing, unpredictable world environment
  - National policy, arms control, etc.
- **The potential drivers for change in the NW stockpile**
- What kinds of change are possible
  - What types of changes in the stockpile may be possible
  - Illustrative examples
- Maintaining confidence in an evolving stockpile
- Controlling costs
- Assessing strategies for the future stockpile
  - The base case
  - Replacement/backup stockpile strategy
  - Consolidated stockpile strategy

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Drivers

## The drivers for change in a test-constrained nuclear stockpile

*National Strategy & Policy*

- Response to the geopolitical environment
- START (and other) arms control treaties
- Nuclear policy
- National budget constraints
- Regulatory laws and treaties

*DoD Initiatives*

- Force posture changes
- New or replacement delivery platform acquisition programs
- Changes in Military Characteristics
- STS environments
- Mission Needs Statements

*Technology*

- Sunset technologies
- Evolution of nonnuclear technologies
- Improvements in advanced conventional weapons
- Advances in defenses

*DOE Initiatives*

- Stockpile Life Extension
- Safety and Use Control Policy
- Performance margin maintenance and improvements
- Manufacturing streamlining
- Specific stockpile issues

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The four major drivers for change are as follows:

1. National strategy and policy. The United States will adjust its security strategy and policy as the world changes. Treaties, such as START, will likely force changes in the deterrent structure. National nuclear policy will continue to evolve. There will likely be budget constraints on both DOE and DoD. In addition, laws and treaties, particularly in the environmental area, make components extremely expensive or impossible to replace as they were originally designed.

2. DoD initiatives. As many of the DoD delivery platforms reach the end of their lifetime, they will need to be replaced. This presents an opportunity to reevaluate the required military characteristics in light of the post – cold war era. The evolution of technology will probably lead to changes in the defined stockpile-to-target sequence (STS), thus placing new requirements on warhead designs. In addition, new mission needs statements could force changes in both the military characteristics (MCs) and STSs.

3. DOE initiatives. As existing warheads reach the end of design life, we will rebuild the warheads through the stockpile life extension programs (SLEPs). DOE must ensure the systems meet the MCs and STSs, but some of the components will be different. We have seen an evolution in surety standards in the past, and as the terrorist threat evolves, we should expect to see some further evolution in these requirements. DOE is responsible for the safety, surety, and performance of US nuclear weapons. Our confidence rests primarily on our nuclear test history. If we find reason to believe that we do not have enough performance margin in some systems, we may need to make a change. The manufacturing infrastructure is being sized and configured for a post–cold war era, but it will produce some components that are different from those originally manufactured; maintaining confidence will be a challenge. We may also find something in our surveillance program that could force change.

4. Technology. Sunset technologies, such as we have seen in the electronics industry, will force change. There are components and materials that are no longer available on the market; the W76 mount material and [redacted] are examples. The evolution in the nonnuclear technologies can affect delivery system capabilities. Improved advanced conventional weapons may replace nuclear weapons in some areas. Finally, changes in the defense systems may force changes in the US force posture.

DOD b(1)

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Drivers

## Secretary of Defense Richard B. Cheney, November 12, 1991 remarks to the San Diego Union editorial board

*" Unfortunately, if you look at the historic record, we have never, ever gone through one of these periods and gotten it right. We've always screwed it up. Every single time when it's happened previously we've been so quick to cash in the peace dividend, to demobilize that force, that within a very short period of time we find that our weakness in and of itself becomes provocative and tempts others to do things they shouldn't attempt; that we always end up having, once again, to commit the force some place – we get in trouble in the world and have to send in troops; that we find ourselves with troops that are not well trained or well equipped, not prepared to go to war."*

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This quotation from former Secretary of Defense Cheney articulates the difficulty of preserving force capability and flexibility for the future.

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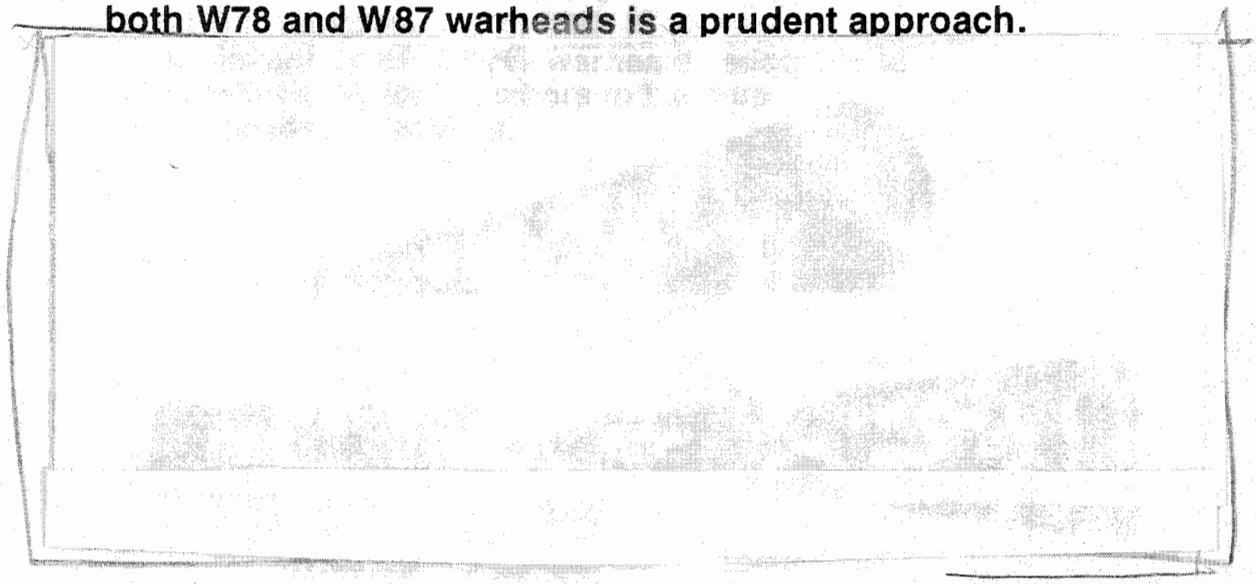
## Guard against failure of ICBM warheads (U)

- **The Air Force plan to employ a MMIII START II force with both W78 and W87 warheads is a prudent approach.**



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DoD DOE b(3)

Under START II, the Air Force plans to deploy both the W78, currently on the Minuteman III (MMIII), and the W87, currently on the Peacekeeper, on the MMIII intercontinental ballistic missile (ICBM) force.

However, the Air Force plan provides a prudent approach to ensure a backup warhead capability.

The Air Force estimates that it will cost approximately $350 million to adapt the W87 warhead to the MMIII delivery system.

DOE DOE b(3)

CIC-1/99-0685

~~SECRET RD~~

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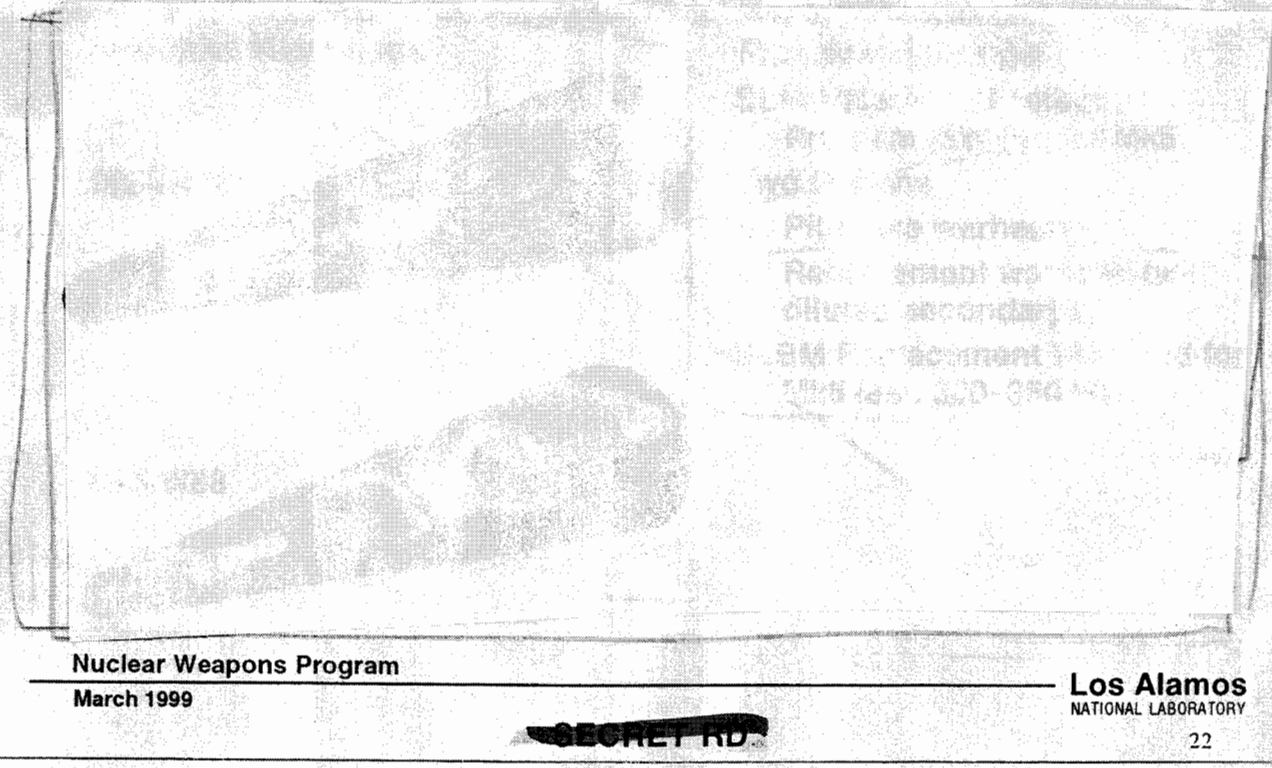
Derived from: LA-4000, Rev.7, 9/94

Change

## Guard against failure of SLBM warheads (U)



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DOD
DOE
b(3)

The W76 and W88 are currently deployed on the submarine-launched ballistic missile (SLBM) force.

DOD
DOE
b(3)

The Navy requested that the DOE initiate the SLBM Warhead Protection Program (SWPP) as backup to the W76 and W88 warheads.

DOD
b(1)

CIC-1/99-0699 [redacted] Change

## The stockpile can evolve

- The stockpile can adapt in response to changing DoD requirements
- Treaties and policies will constrain the evolution
- Confidence must be maintained
- Cost will be a driver

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[redacted]
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To summarize, the nation has significant flexibility within the existing stockpile to support a wide range of potential options for the future. As treaties and policies force changes in, and constrain evolution of the stockpile, preserving flexibility for the future should be considered in the range of options.

However, preserving flexibility comes with a price. We will now discuss the constraints and tradeoffs; primarily how confidence is maintained and how costs could be managed in a fixed budget.

CIC-1/99-0715

[redacted]

Classifier: Thomas K. Scheber, Project Leader, NWT
Derived from: LA-4000, Rev.7, 9/94

[redacted]

## Base case: Our current approach (U)

*With Limitations

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[redacted]

The base case is defined by the current deployment scheme shown here. In this case the warheads currently deployed on each nuclear delivery system would be adapted to the next-generation, replacement weapon system.