

DEFENSE THREAT REDUCTION AGENCY



Making the World Safer

Global Strike Technology Strategy

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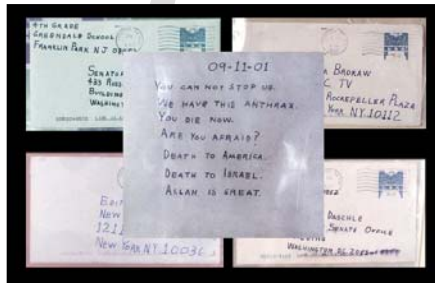
*Precision Strike Association Winter Roundtable
January 21, 2004*

DTRA's mission is to reduce the threat of Weapons of Mass Destruction



Nuclear Weapons

*...difficult to acquire,
devastating in use*



Biological Weapons

*...use available technology and
are potentially catastrophic*



Chemical Weapons

...cheap and easy to make



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DTRA uses a comprehensive set of tools to reduce the threat of Weapons of Mass Destruction

Arms Control:

Fulfilling treaty obligations and countering proliferation

Threat Reduction:

Dismantling the former Soviet nuclear arsenal in place and eliminating Iraqi weapons of mass destruction

Technology Development:

Developing, testing and fielding offensive and defensive technologies

Chemical and Biological Defense:

Assuring operations in hostile environments

Combat Support:

Assessing vulnerabilities, assuring the nuclear deterrent

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Making the World Safer

The new Global Strike mission requires an end-to-end technology development strategy



From intelligence preparation and planning...



to weapons employment ...



to combat assessment.



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Global Strike is built on six tenets:

- **Rapid execution -- goal is hours**
- **Relatively short duration -- not extended theater operations**
- **Long-range -- within and across combatant commanders' boundaries**
- **Integrates conventional with nuclear, information operations and other types of attacks**
- **In support of regional combatant commanders or as directed by the President or Secretary of Defense**
- **Effects-based targeting, analysis, planning, and execution to attack high-payoff / high value targets**



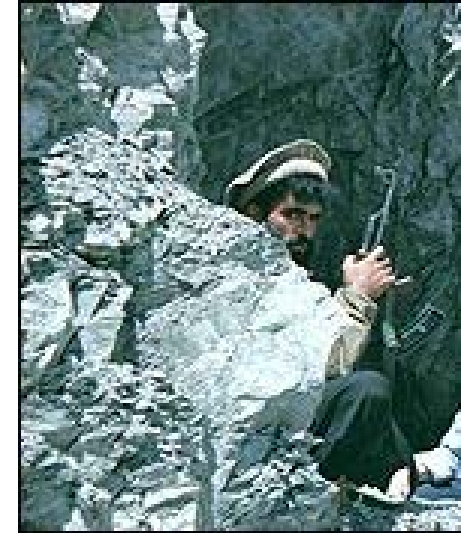
Global Strike is focused on high payoff/high value targets



Command and Control



Leadership



Terrorists

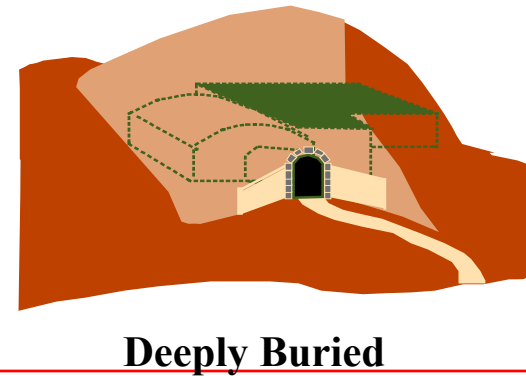
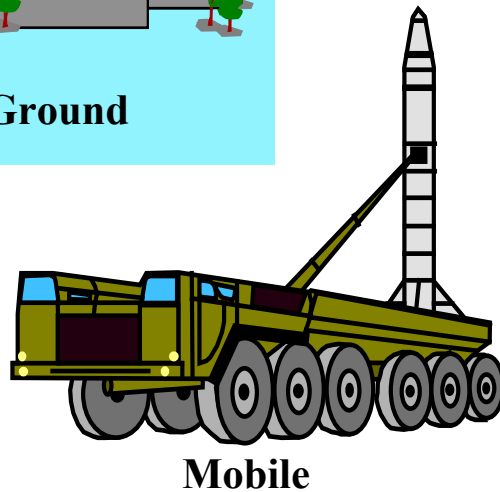
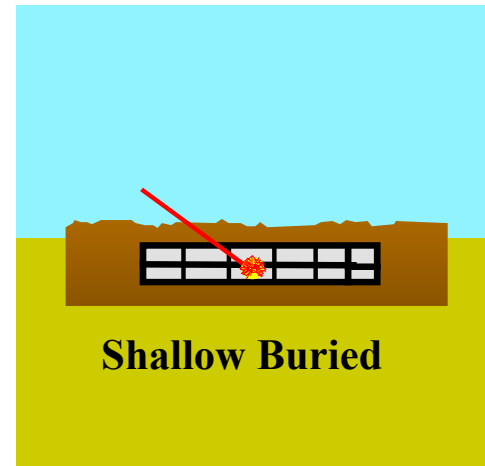


Weapons of Mass Destruction



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These targets span the entire range of protection factors



Global Strike targets encompass all terrains and environments



deserts



jungles



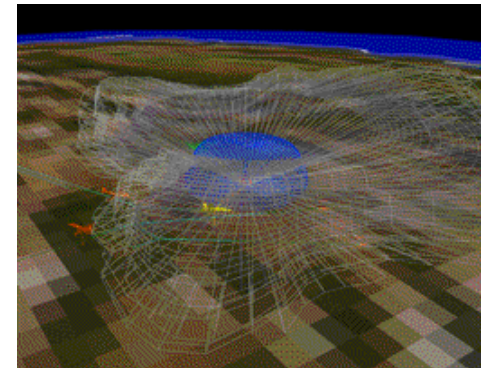
mountains



cities



... in fire, smoke and dust

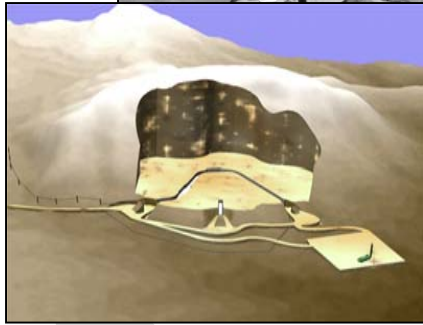


... and countermeasures

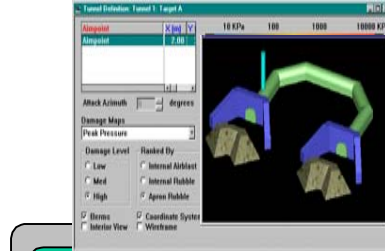


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The Global Strike technology strategy should yield an integrated family of systems



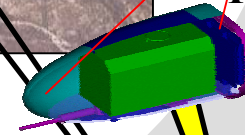
Accurate Intelligence



High-Fidelity Planning Tools



Appropriate Weapons and Delivery Platforms



Prompt, Reliable Combat Assessment



Robust Command and Control

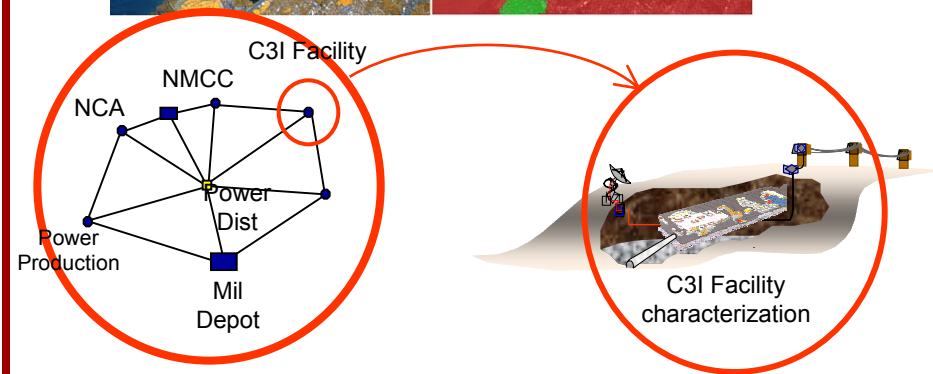


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Accurate intelligence - forms the foundation

Approach

- Enhance HUMINT analysis
- Exploit coherent change detection technology
- Integrate functional modeling, reverse engineering
- Integrate all-source information
- Reduce Target Location Error/Uncertainty
- Develop network-level indicators
- Develop “data-mining” capabilities

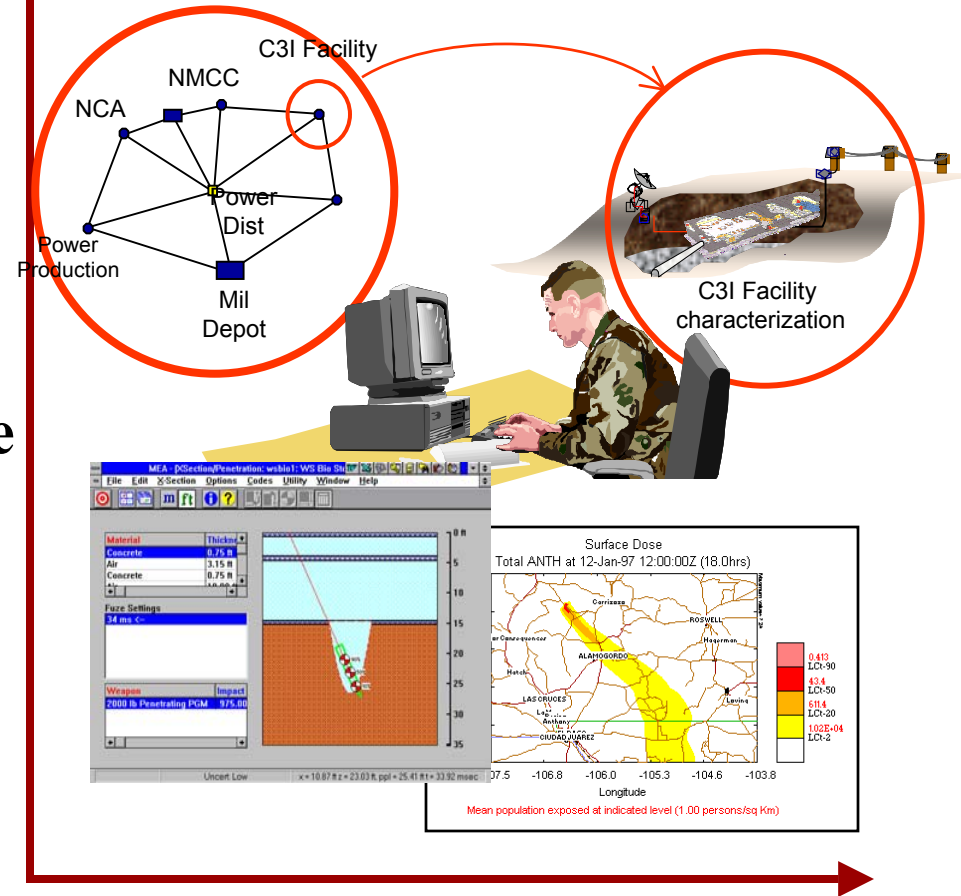


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Planning tools – provide accurate, integrated, high-fidelity answers

Approach

- Integrate sensor data with all-source information
- Standardize databases
- Automate data searches
- Develop physics-based damage expectancy and collateral effects models
- Automate attack selection
- Integrate mission planning tools into C2 architecture
- Match optimum weapon to target

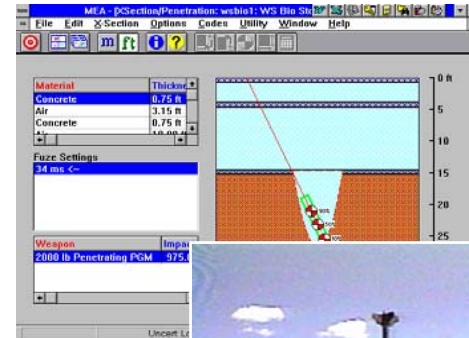


Weapons and tactics -

we are at the leading edge of a revolution in conventional weapons design

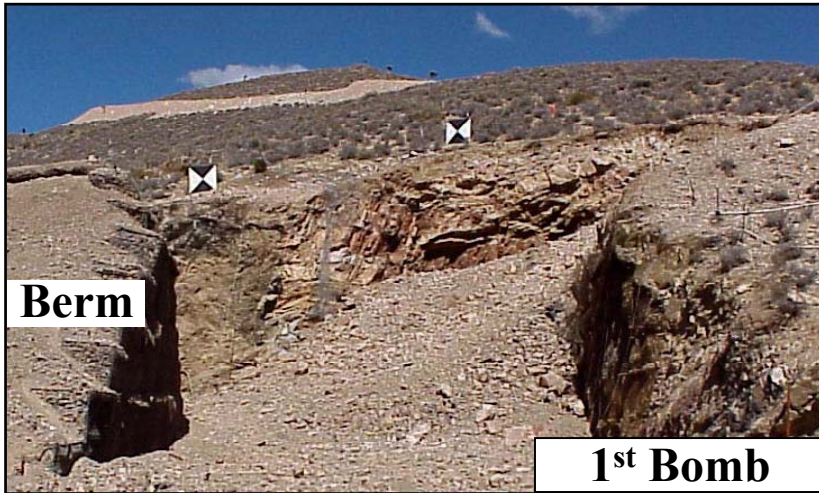
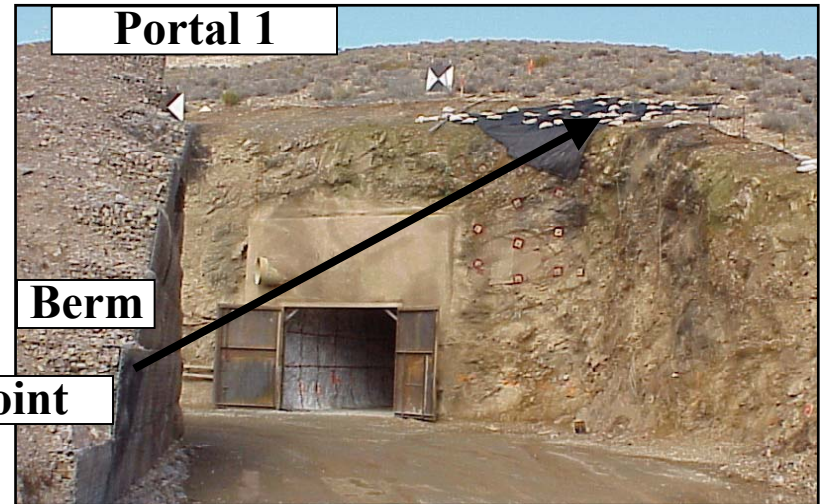
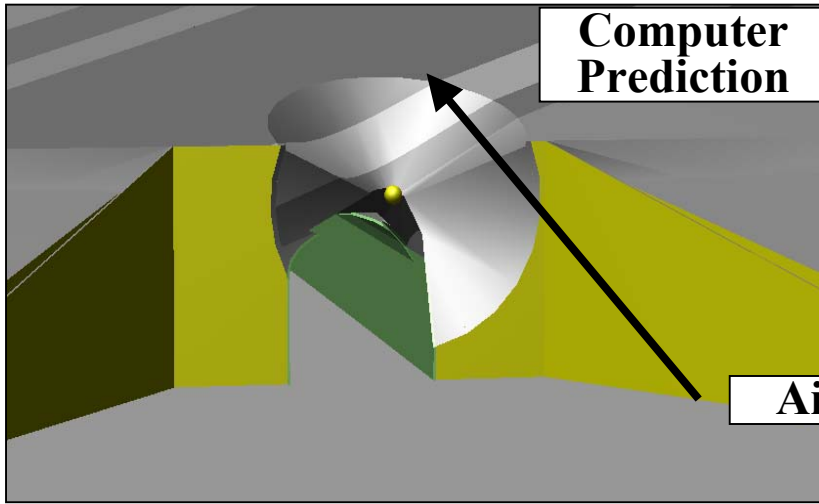
Approach

- **Increase range to target**
- **Increase speed to target**
- **Enhance penetrating capabilities**
- **Tag and track employment of individual weapons**
- **Develop inexpensive weapon-borne sensors**
- **Tailor warheads for specific effects**
- **Consider “niche” weapons for high value targets**

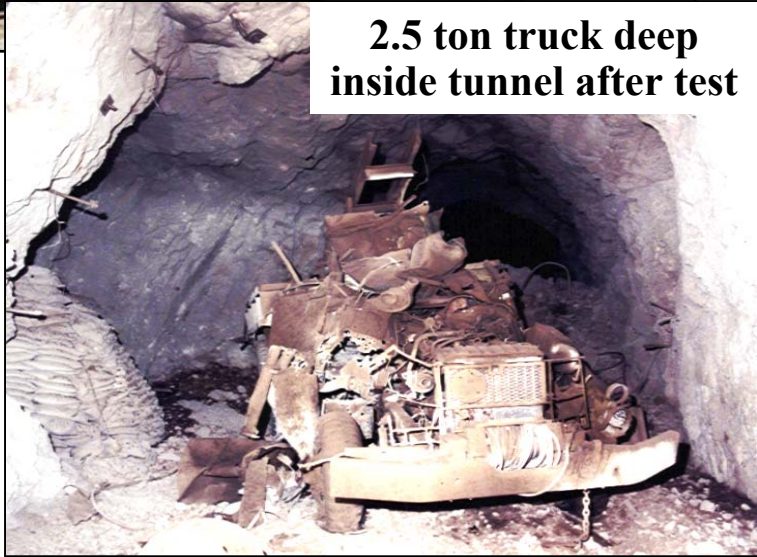
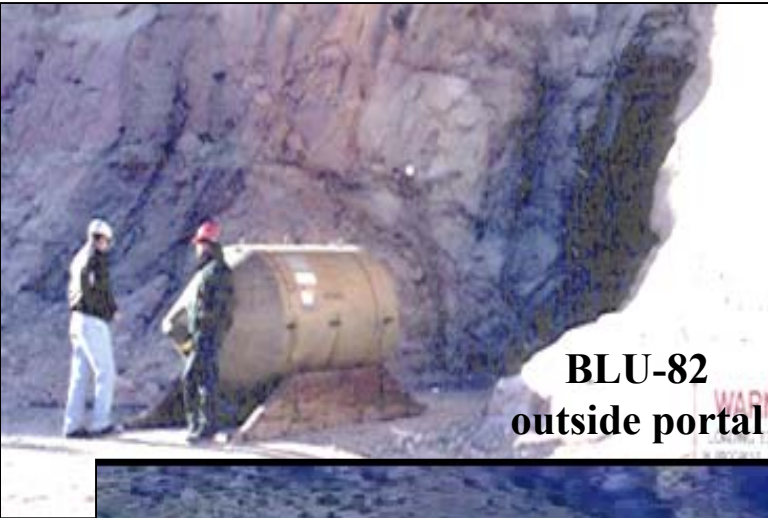


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Weapons and tactics – vertical attack on portal denies access to hard targets



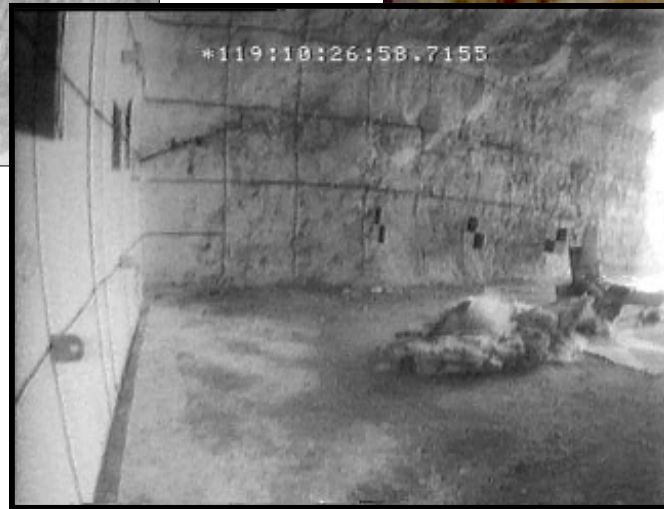
Weapons and tactics – massive bombs enhance in-tunnel effects



Weapons and tactics – “skip-bombing” enhances internal blast effects



Weapon entering portal



“Skip” inside portal



Detonation inside tunnel



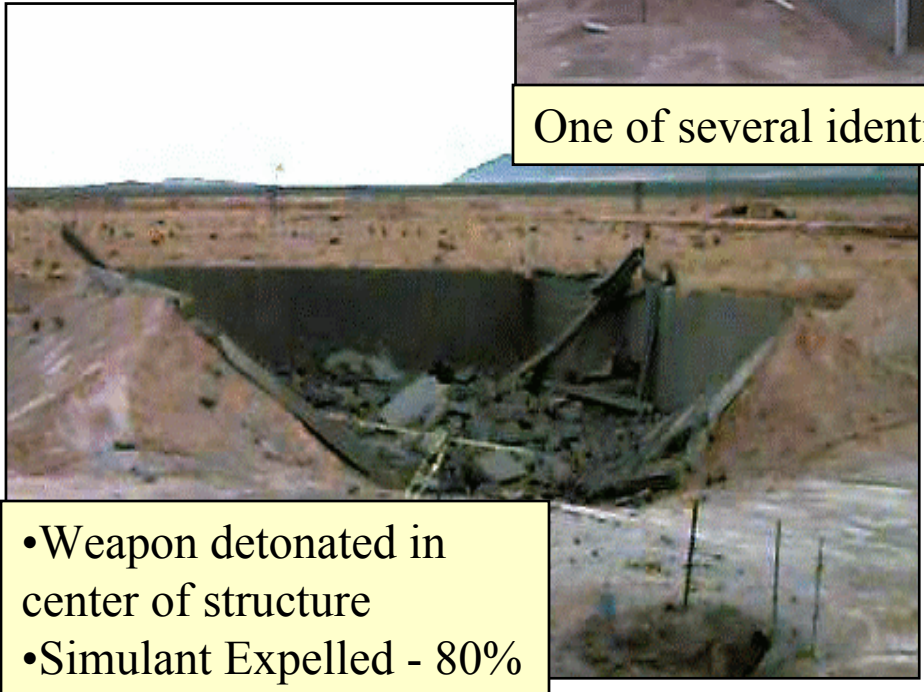
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Weapons and tactics -

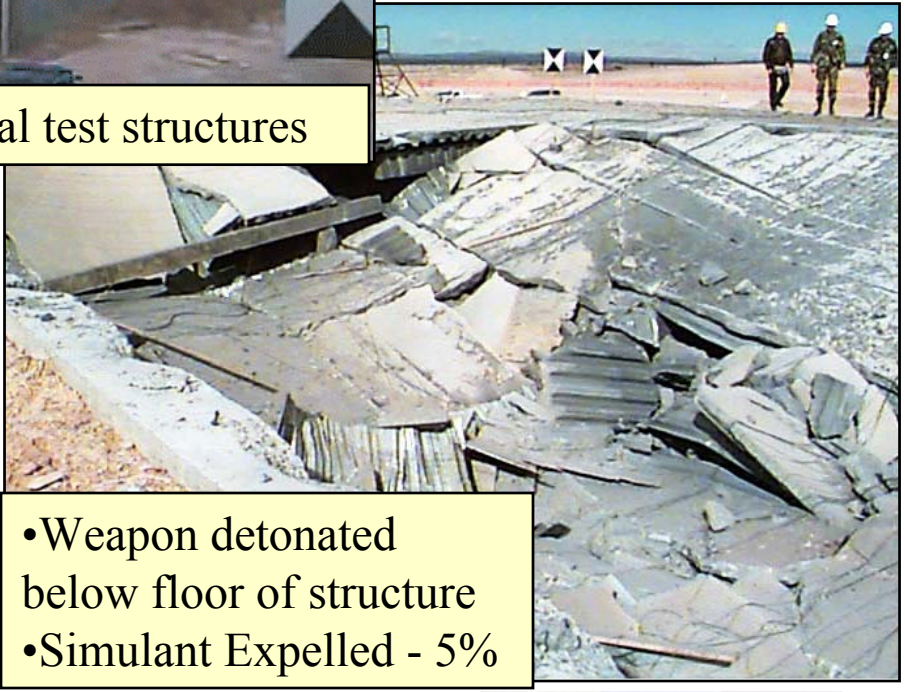
penetration and delayed fuzing can reduce WMD release



One of several identical test structures



- Weapon detonated in center of structure
- Simulant Expelled - 80%

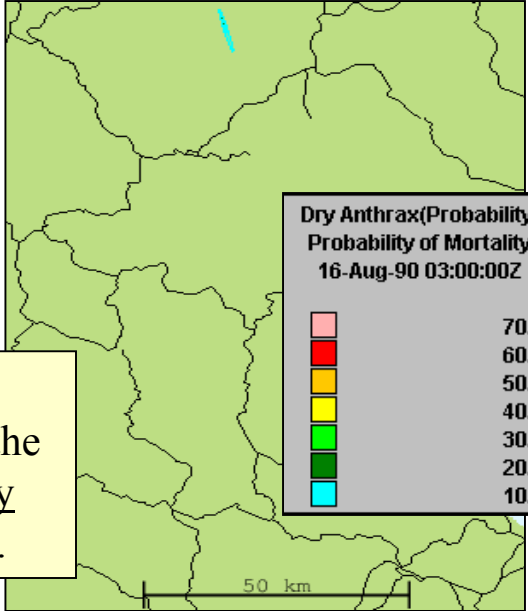
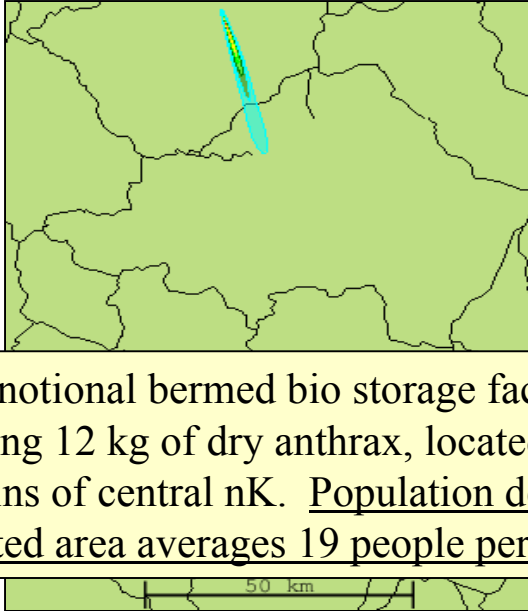
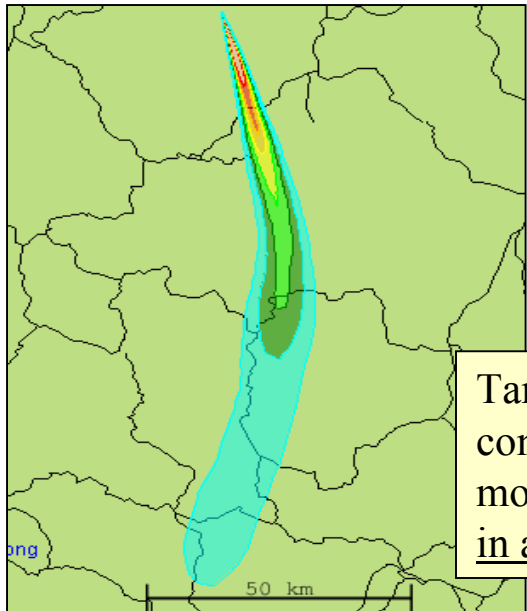


- Weapon detonated below floor of structure
- Simulant Expelled - 5%

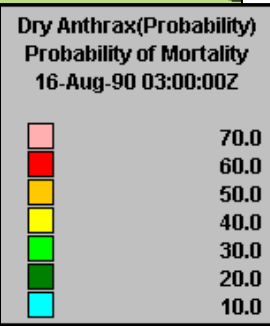


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Weapons and tactics – destroying the agent greatly reduces the potential for negative consequences



Target: notional bermed bio storage facility containing 12 kg of dry anthrax, located in the mountains of central nK. Population density in affected area averages 19 people per km².



Agent Release: **424 g**
Area exceeding 10% mortality is approximately 135 km long by 15 km wide, totaling 1200 km²
Estimated Fatalities: 9,000

Agent Release: **42.4 g**
Area exceeding 10% mortality is approximately 35 km long by 3 km wide, totaling 65 km²
Estimated Fatalities: 700

Agent Release: **4.24 g**
Area exceeding 10% mortality is approximately 10 km long by 1 km wide, totaling 5 km²
Estimated Fatalities: 40

*Weapons and tactics –
hard and WMD targets demand high reliability*

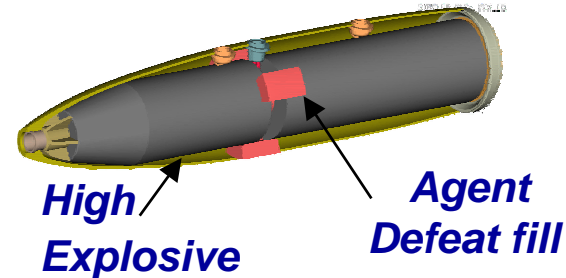


Weapons and tactics – high value targets require “niche” capabilities

- **Research weapon/target phenomena**
- **Develop specialized weapons for unique targets**
- **Deliver limited numbers of specialized weapons**
- **Train specific units in employment of “niche” weapons**
- **Ensure planning tools and combat assessment capabilities match weapons**



Thermobaric Hellfire – enhanced blast effects in buildings for Military Operations in Urban Terrain (MOUT)



CrashPAD - first gravity weapon specifically designed to kill bio agents



*Weapons and tactics –
rapid development is key to matching niche
weapons to emerging targeting problems*

- **Leverage existing RDT&E efforts**
- **Modify or incorporate existing systems**
- **Exploit modeling and simulation**
- **Test realistically**
- **Produce limited numbers**

BLU-118 “Thermobaric” bomb for enhanced blast effects in caves



- Designed, developed, demonstrated and delivered in 60 days
- Employed in Operation Enduring Freedom



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*Weapons and tactics –
our nuclear forces also support Global Strike*

- **Nuclear forces can deter and counter asymmetric threats**
- **Some targets require the energy of a nuclear weapon for their destruction**
- **Nuclear weapons can overcome target location uncertainty**
- **Rapid delivery systems are mature**
- **Nuclear weapons can functionally defeat super-hard targets**

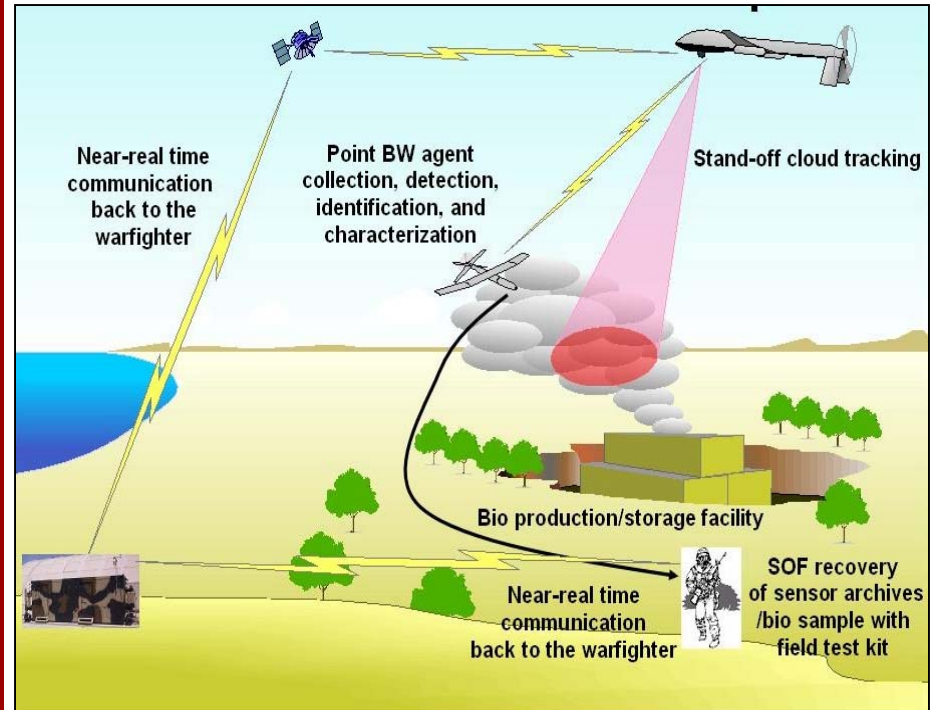


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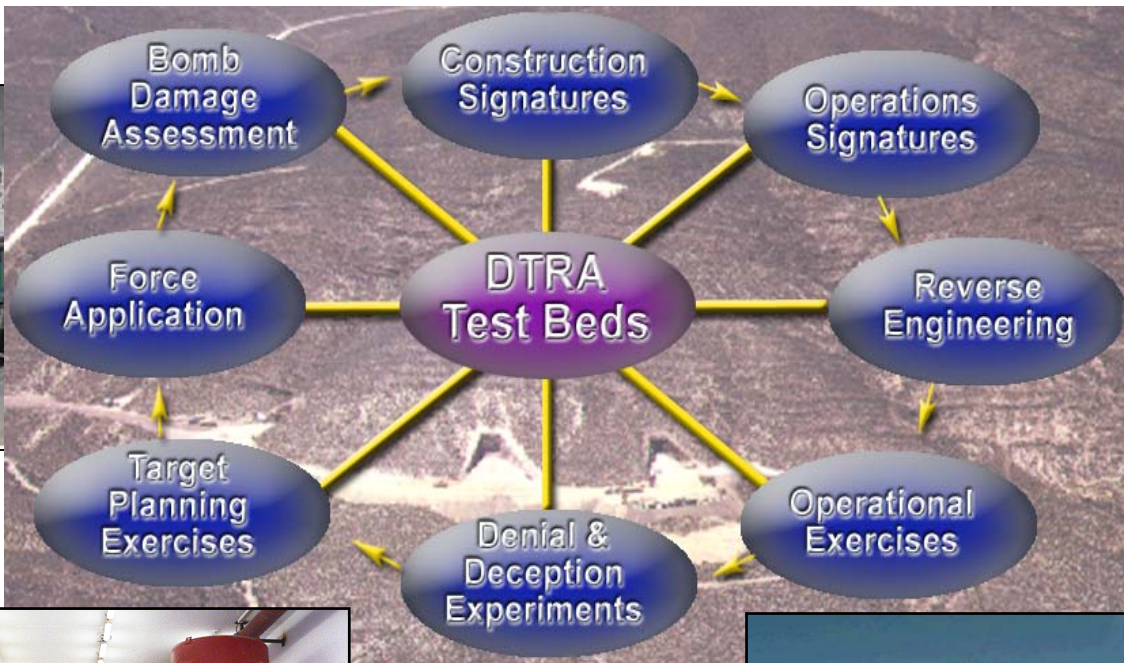
Combat assessment - must be prompt and reliable

Approach

- **Demonstrate new phenomenology/indicators**
- **Develop or modify sensors for WMD capability**
- **Incorporate weapon-borne sensors and taggants**
- **Integrate assessment info back into planning tools for re-attack**
- **Develop network-level functional effects models**
- **Integrate combat assessment capabilities into C2 architecture**



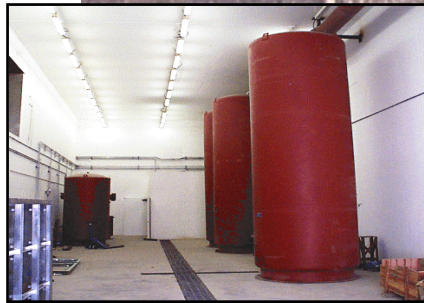
High fidelity test beds facilitate end-to-end integration of Global Strike technologies



Bio agent fermenter



SCUD TEL in tunnel



Chemical storage



Prototypical construction



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Global Strike presents unique challenges that demand unique and innovative technological approaches

Challenges

- **Rapid execution**
- **Short duration**
- **Long-range**
- **All types of attacks**
- **Effects-based**
- **High-payoff targets**
- **All environments**

Requirements

- **Accurate intelligence**
- **Fast planning tools**
- **Appropriate weapons**
- **Prompt BDA**

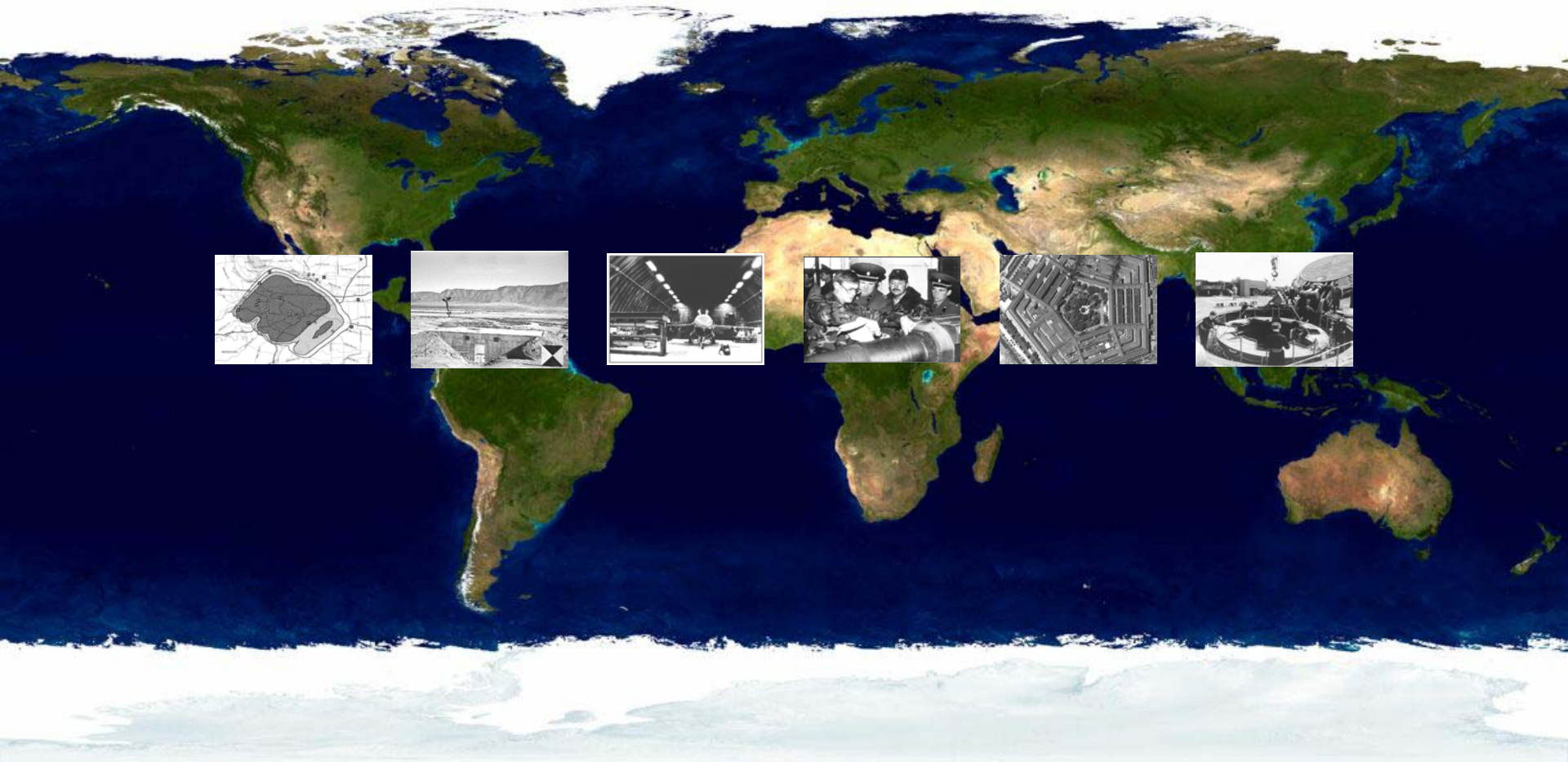
Approaches

- **Data integration**
- **Innovative tactics, training and procedures (TTP)**
- **Rapid development**
- **Niche weapons**
- **Systems integration**





Making the World Safer by Reducing the Threat of
Weapons of Mass Destruction . . .



Providing technology solutions for Global Strike