DTRA Research and Development
Nuclear Data Needs

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Kevin Mueller
Defense Threat Reduction Agency
Topics

• How the new National Defense Strategy is shifting DTRA’s focus
• Biggest challenges
• Status and path forward
• Example nuclear data use case
Impact of the National Defense Strategy

- DTRA is changing to better support the National Defense Strategy (NDS) and Combatant Commands.

- The National Defense Strategy identifies 3 DoD priorities:
  - Build a more lethal force
  - Strengthen alliances and attract new partners
  - Business reforms

- If the new metric in DoD is lethality, how does nuclear data compete for resources?

- Can we link nuclear data issues to the risk of catastrophic failure on a DoD mission a Combatant Command cares about?
There are serious challenges to overcome

• One of our biggest challenges is understanding how DoD users at the Combatant Commands and in the Services are interacting with nuclear data to support acquisition, training, operations, and planning
  • Basic Users: Run HPAC, IWMDT, or an unsupported legacy 1970s model
  • Intermediate Users: Write their own models or combine legacy models
  • Advanced Users: Run SME codes such as MCNP

• The reality is that almost every basic, intermediate, and advanced DoD user will treat the codes (and underlying data) as a black box

• DoD will make decisions that put lives at risk or cost billions of dollars based on those code results
Status and path forward

Phase I (Risk Analysis):

- Define use cases (linkage to mission)
- SME assessment of nuclear data needs by use case
- Identify modeling codes used by DoD for each use case
- Identify provenance of nuclear data for those modeling codes
- Assess risk of mission failure from data need
Example use case – fight and win a conventional battle after limited nuclear use

Acquisition:
Q: Will a soldier’s widget survive the full range of effects from a nuclear explosion a few kilometers away on the ground or an atmospheric explosion?

Operations:
Q: How long do I have to wait to cross this debris field and advance on the enemy?

Planning:
Q: How does a nearby nuclear explosion degrade the force (people, equipment) and impact our ability to continue the fight?

Which nuclear data issues might give us a militarily significant wrong answer for this use case?
Questions?