

**2025 Nuclear Deterrence Summit Pre-Conference Workshop
Modernization: Delivering on the Strategic Deterrent**



**PRODUCTION-BASED RESILIENCE – SUPPLY
CHAIN SECURITY AND RESILIENCE**

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All Roads Lead to Pantex

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Production Based Resilience

2022 Nuclear Posture Review (NPR) defines three pillars to help create a more resilient and adaptive nuclear security enterprise

- The 2nd pillar is Production-Based Resilience

Key Attributes of Production-Based Resilience, as defined in NPR

- Flexibility
- Supply chain security and resilience
- Production capacity margin
- Elimination of single point failures

Supply Chain Security presents the greatest challenges in achieving Production-Based Resilience at Pantex

Achieving Supply Chain Security and Resilience via Risk Management

- 1. Define and characterize the full supply chain**
- 2. Identify risks with each supply chain element**
- 3. Develop mitigating strategies for the identified risks**

Defining and Characterizing the Full Supply Chain

The Pantex Supply Chain has 2 main components

- Commercial sources
- Other government agencies
 - NNSA production agencies (PAs) and DOD sources
 - Pantex production ultimately depends on the robustness of other PA supply chains as well

Supply chain management goes beyond the materials and components directly used in production

- Critical to address the supply chain for enabling capabilities (e.g., HVAC maintenance, tooling, and test equipment)

Achieving a Complete Characterization of the Supply Chain for all Components that Could Impact Production is Very Difficult, if Not Impossible

Major Supply Chain Risks

Single Suppliers

- Historical suppliers can go out of business or focus on other clients or products (e.g., explosive flooring)
- Our needed quantities are typically not large enough to influence provider priorities

Globalization of the Supply Chain

- Goal is to source all materials from within the US
 - Does not mean all the vendors source all their inputs from within the US
 - Common for US vendors to be bought by foreign companies
- Risk of interruption not just from adversarial countries

Suspension/Changes in Manufacturing of Needed Materials

- PFAS (and other “forever” chemicals) driving elimination/changes in manufacturing of certain materials
 - Can be impossible to procure an identical material
- Manufacturer can change material without notice because their “output specifications” are different than our “input requirements”
- No warning until the procured materials fails our acceptance testing

Mitigating Strategies

Mitigation strategies can be developed for known issues

- Replace
- Stockpile
- Diversify vendor base

Not possible for unknown issues or for issues with too many variants (e.g., HVAC)

Addressing risks at the site level could lead to suboptimization at the enterprise level

Need to develop an enterprise-wide agile capability to deal with supply chain issues

- Enterprise risk characterization and mitigation
- Agile processes to allow for replacements and substitutions more quickly
- Integrate risks into long term surveillance and stewardship plans
- This has begun in some key areas (e.g., explosives) but needs to be expanded

QUESTIONS?

Thank You!