

The Nuclear Materials Management and Safeguards System (NMMSS)



2015 Annual
Users
Training
Meeting

Accuracy

Accountability

Performance



May 11-14, 2015

Las Vegas, NV

The Dynamics and Complexities of Accounting for Foreign Obligated and Unobligated Nuclear material

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Purpose



- Accurate tracking of foreign obligated material in the U.S. is vital to U.S. national security.
- 123 Agreements provide country-specific provisions for tracking material, equipment, and components. These may include limitations on use and re-transfers.
- This presentation covers the analytical framework used to account for obligated and unobligated nuclear materials in the U.S.



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Background: Obligation Framework



123 Agreements for Cooperation and associated Administrative Arrangements

Purpose

- “Agreements necessary, per Section 123 of the Atomic Energy Act of 1954, as amended”
- “Assurances that material or equipment is transferred pursuant to an Agreement for Peaceful Nuclear Cooperation”

Scope

- Material
- Equipment
- Components

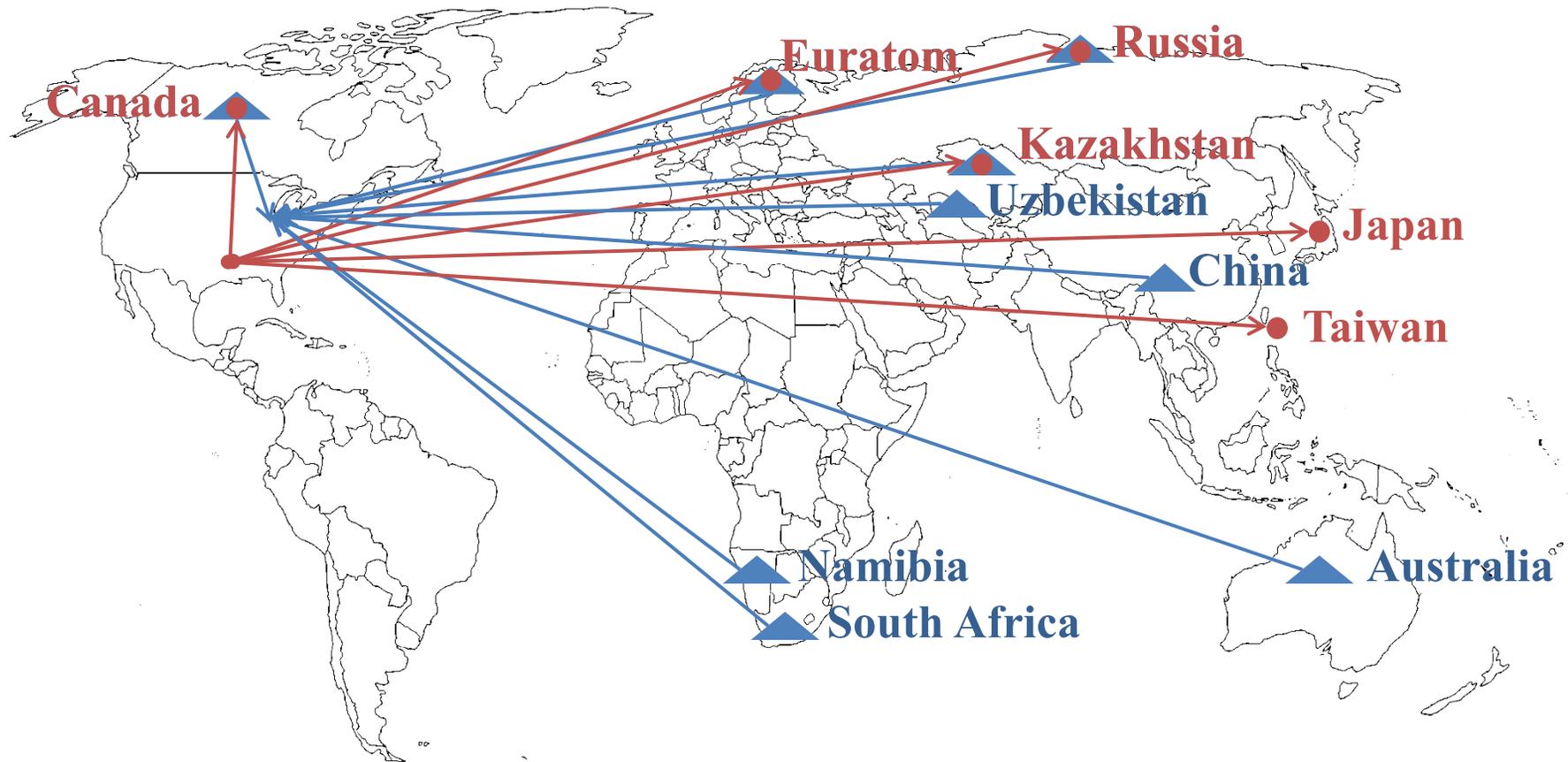


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Major U.S. Import/Export Partners in 2014



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Countries with Obligated Material in the United States



- Australia
- Canada
- European Atomic Energy Community (EURATOM)
- Japan
- China
- Switzerland
- Chile
- Brazil
- Argentina

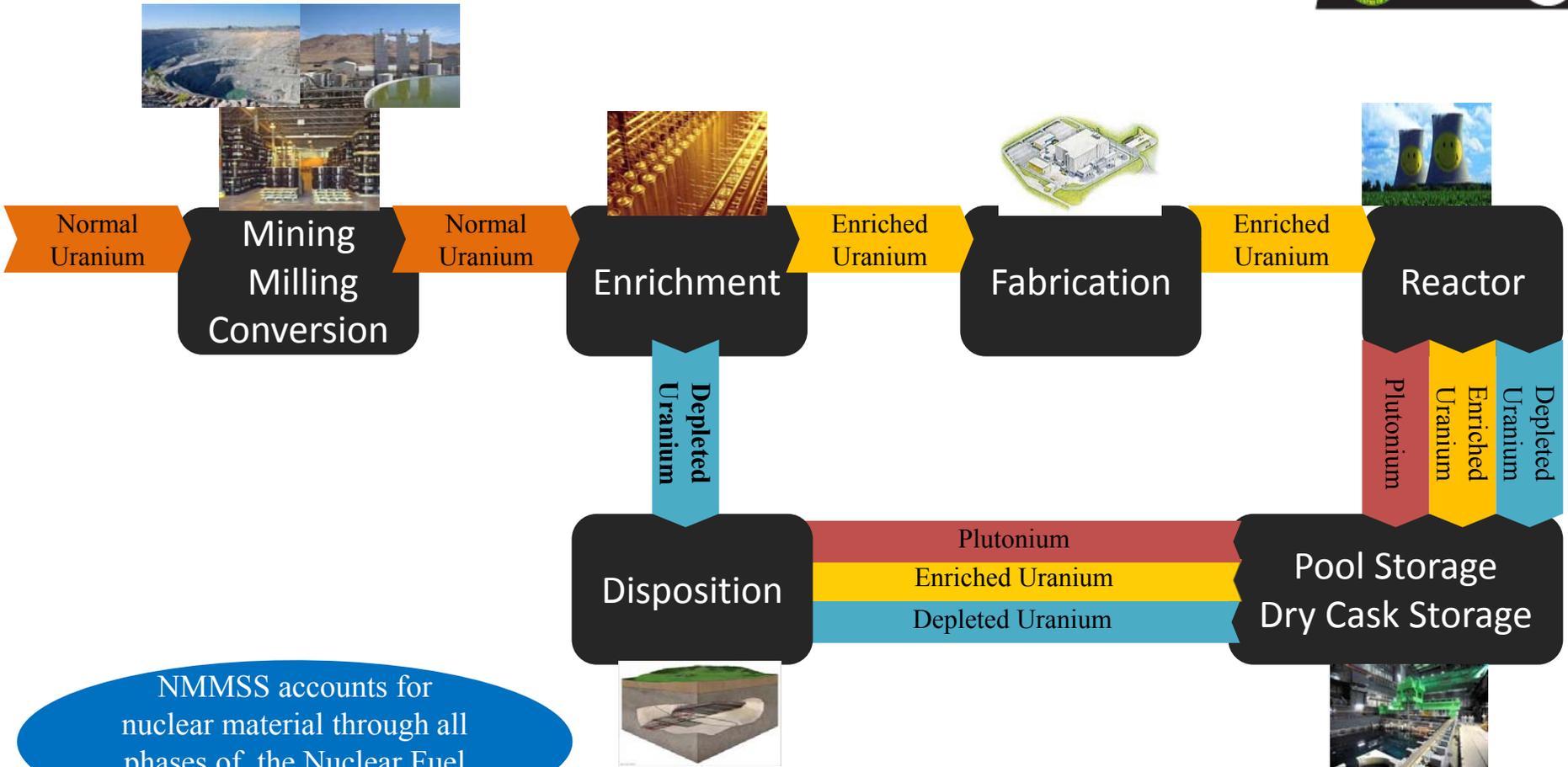
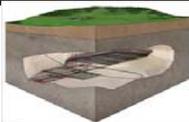


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Obligations can be applicable to any phase of the Nuclear Fuel Cycle



NMMSS accounts for nuclear material through all phases of the Nuclear Fuel Cycle.

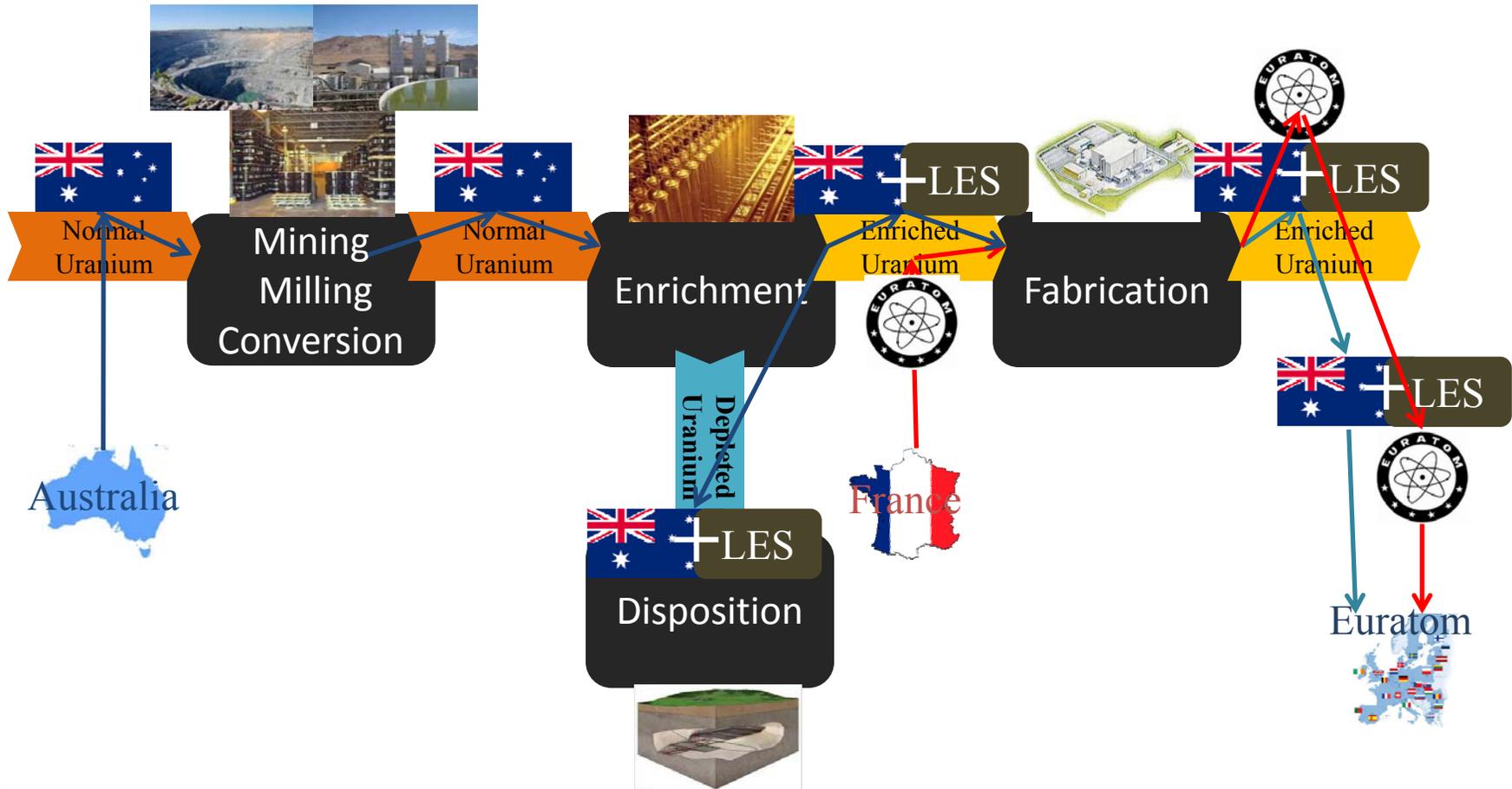


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Framework for U.S. Tracking of Foreign Obligated Nuclear Materials (Must Account for Material in Each Phase)



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Framework for U.S. Tracking of Foreign Obligated Nuclear Materials (Analytical Process)



- Maintain facility-specific obligation balances
- Account for material gains and losses, e.g.
 - Burnup
 - Production
- Perform facility-specific reconciliation
- Prepare and submit formal reports to the applicable country
- As requested, support the country with its domestic reconciliation of obligated material
- Complexities and challenges arise as the result of
 - Layered obligations
 - Exchanges



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Simple Depiction of Accounting for Unobligated Material



**Total Inventory for a
Type of Nuclear
Material**

—

**Total Foreign
Obligated Quantities
for a Type of Nuclear
Material**

=

**Estimated
Unobligated Quantities
for a Type of Nuclear
Material**

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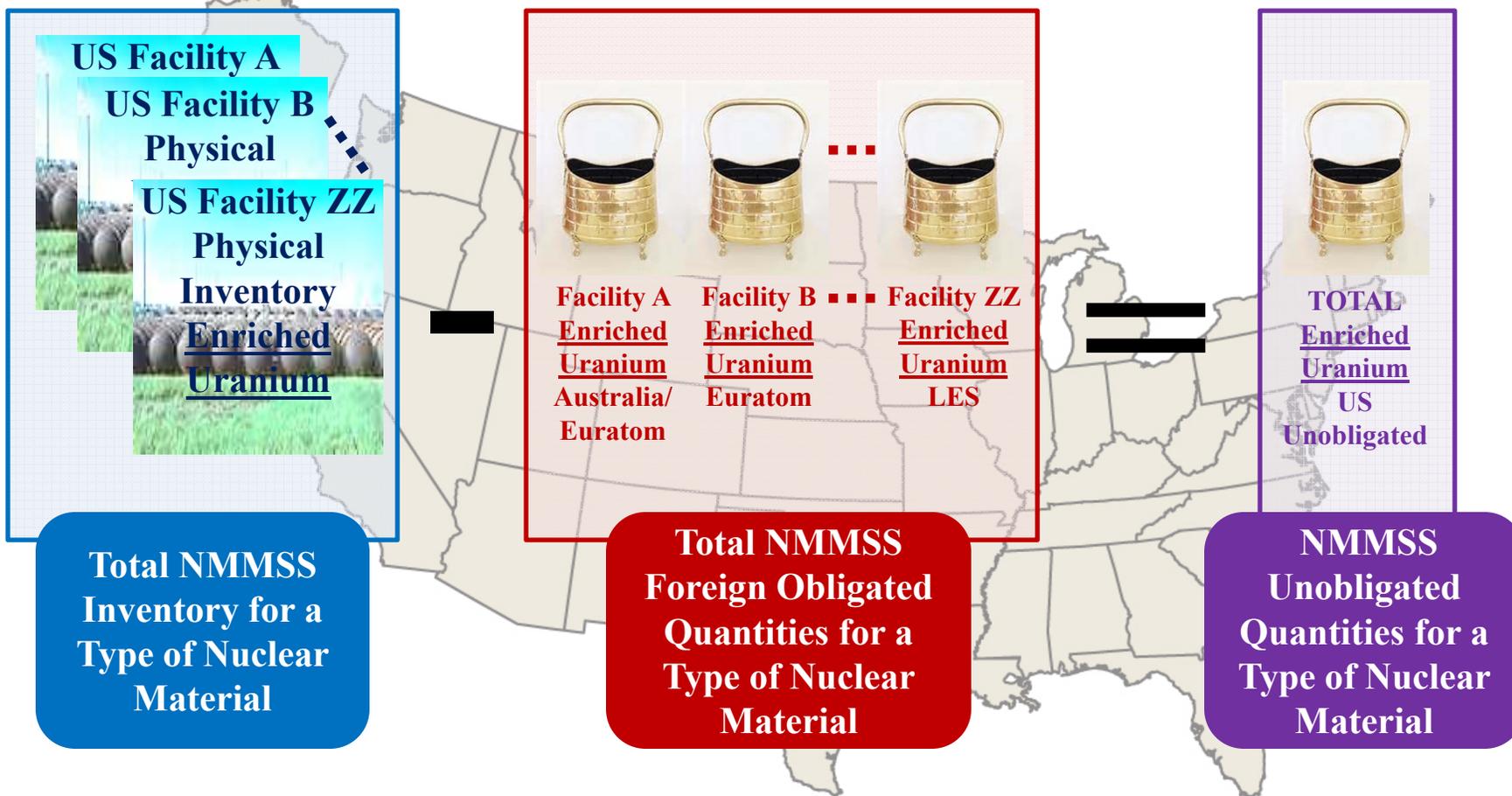
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Case Study - Accounting for Unobligated Material

Complexities of Obligations



What is the current available amount of unobligated enriched uranium in the U.S.?



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Takeaways



- Tracking of foreign obligated material in the U.S. is vital to U.S. national security.
- It is essential to demonstrate compliance with the Peaceful Nuclear Cooperation Agreements.
- Credible accounting of unobligated nuclear material requires technical rigor and diligence in identifying all obligations relevant to material, equipment, and components.