



# A Nuclear Services and Waste Management Company

## US DOE Mixed Waste Disposition: Panel Discussion

Renee Echols

Perma-Fix Environmental Services, Inc.

Senior Vice President

WM13 Session 52, February 26, 2013



nuclear



technical



waste

# Locations



Perma-Fix Business Center  
 Knoxville, TN



DSSI - Kingston, TN



M&EC - Oak Ridge, TN



Perma-Fix Florida - Gainesville, FL

Perma-Fix  
 South Georgia



Perma-Fix North West - Richland, WA

Perma-Fix Headquarters  
 Atlanta, Georgia



Perma-Fix United Kingdom



Perma-Fix Canada



Nuclear



Waste



Technical

# Perma-Fix Environmental Services



Perma-Fix Environmental Services, Inc., an international nuclear services company and leading provider of nuclear waste management services, provides an integrated, nationwide, network of treatment, storage and disposal facilities, transportation services, engineering consultants, site remediation teams, government service centers and unique mixed waste management services. The company's increased focus is on providing nuclear services to hospitals, research labs and institutions, federal agencies, including the Department of Energy and the Department of Defense, and nuclear utilities.



Nuclear



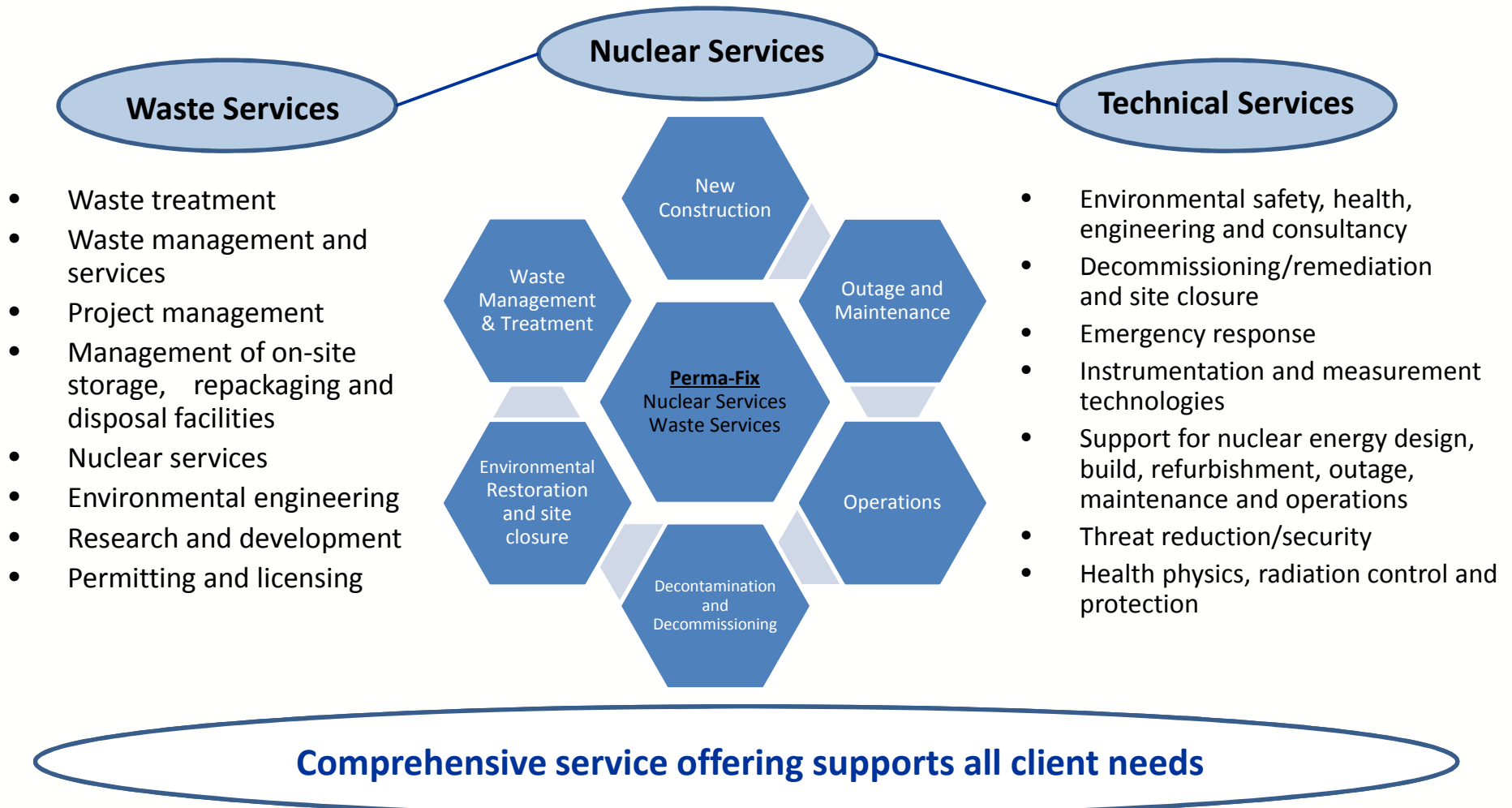
Waste



Technical

WM13 Session 52, February 26, 2013

# Complimentary Nuclear Capabilities



Nuclear



Waste



Technical

WM13 Session 52, February 26, 2013

# “New” Waste Challenges – High Dose

- Gloveboxes:
  - By their nature they are problematic due to high activity, dose, lead shielding, etc.
  - Physical constraints present challenge
  - PFP Hanford 3 story glovebox
- Radioisotope Thermoelectric Generators (RTGs)
  - High activity (ORNL had 29,000 Pe-Ci)
  - Include encapsulated Hg requiring treatment or variance



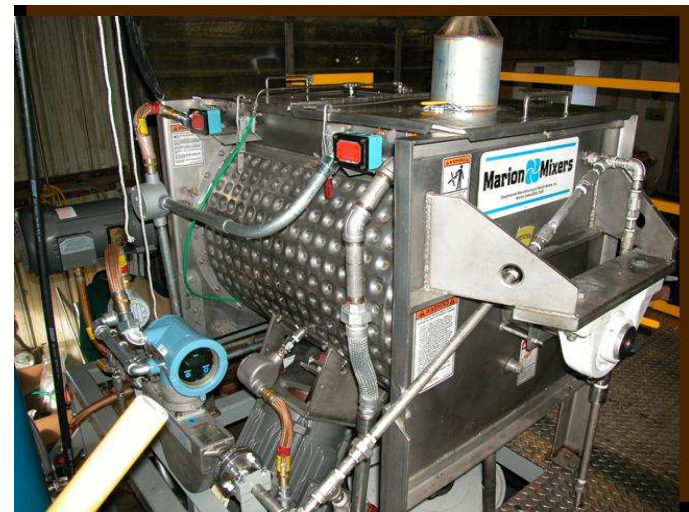
# “New” Waste Challenges – Physical

- Classified wastes
  - Weapons components:
- Recovery of precious metals (e.g., radar systems);
  - Demilitarization
  - Other classified wastes:
    - Treatment for Hg
    - Reactives
    - High activity (SNM)



# “New” Waste Challenges – Chemical

- Mercury – At Y-12 facility. The COLEX process used large volumes of elemental Hg for weapons production
  - > 700,000 lbs suspected to have been released to the environment
  - Various chemical and physical forms. Other contaminants to treat



Nuclear



Waste



Technical

WM13 Session 52, February 26, 2013

# “New” Technologies

- Organic Destruction
  - Arvia (UK Company) developed technology to destroy organics
  - Uses specialized media (Nyex™)
  - Electrochemical oxidation
  - Destroys 99.9% of organics
  - Demonstration for Dioxins/Furans



Nuclear



Waste

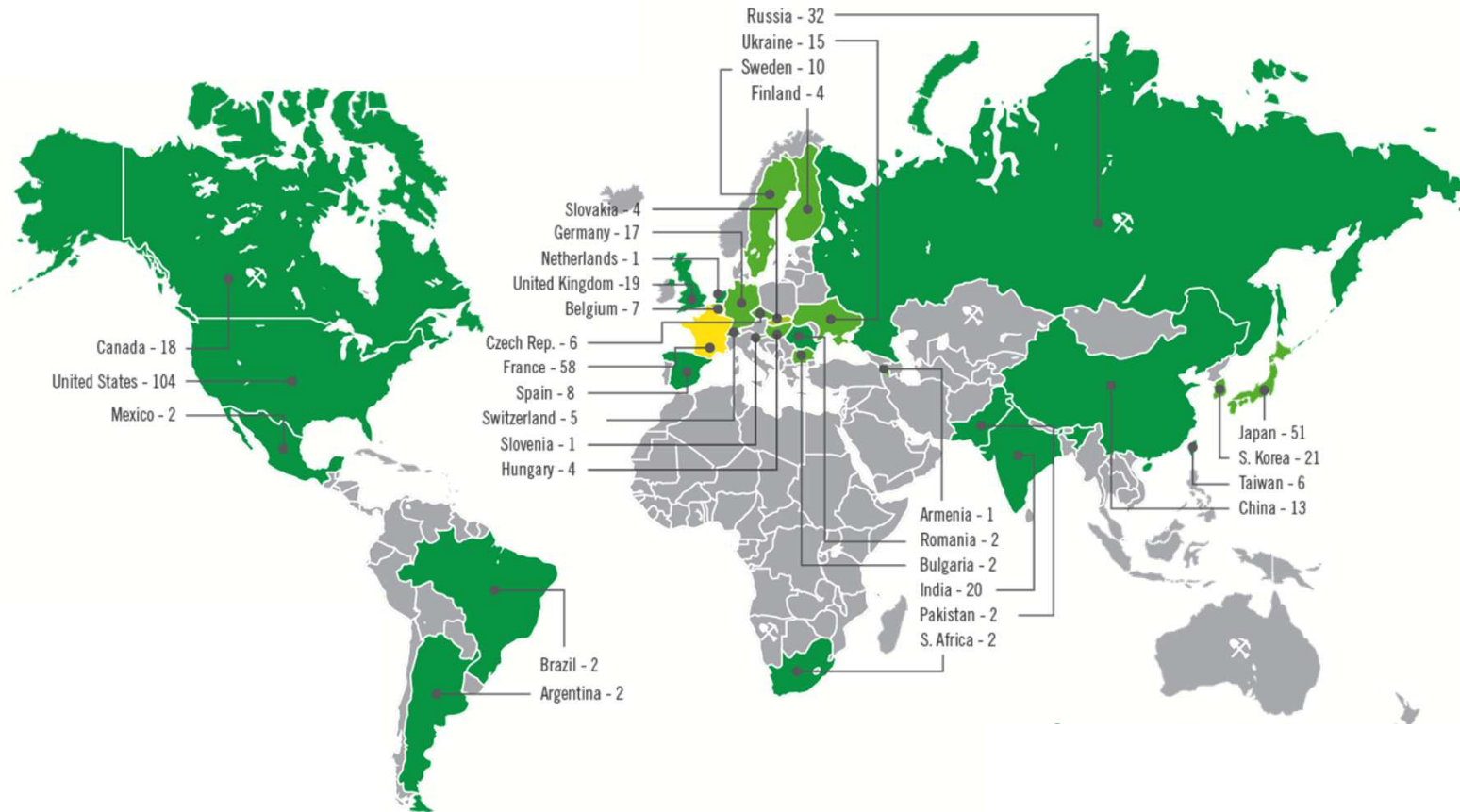


Technical

WM13 Session 52, February 26, 2013



# The Future? International Markets



Nuclear



Waste



Technical

WM13 Session 52, February 26, 2013

# Conclusion

We will continue to identify new mixed waste streams as clean-up around DOE complex continues. However, MLLW treatment remains to be lower on priority list and with unusually tight budgets even less of a priority. Treatment companies have to stay viable until budgets improve (FY15??);

- There may be new opportunities for treating tank wastes as new disposition approaches are considered;
- International clean-up is generally well behind the U.S. therefore U.S. companies can export our treatment expertise;



Nuclear



Waste



Technical

WM13 Session 52, February 26, 2013