2015 Fukushima Forum

Colin Austin
Energy*Solutions*

Energy*Solutions* at a glance…

- Uniquely qualified, technology-driven nuclear services company
- Leading pure-play provider of back end nuclear services
- Owner of the world's largest privately owned low-level radioactive waste disposal facility
- Annual revenue ~$1.5B
- Operates in commercial, government & international markets
- Provide design, engineering, implementation & operational services for complex nuclear projects.

Who is EnergySolutions

ENERGYSOLUTIONS

ENERGYSOLUTIONS

Envirocare of Utah (February 2005)

Scientech (September 2005)

BNG America (February 2006)

Duratek (June 2006)

Safeguard International (December 2006)

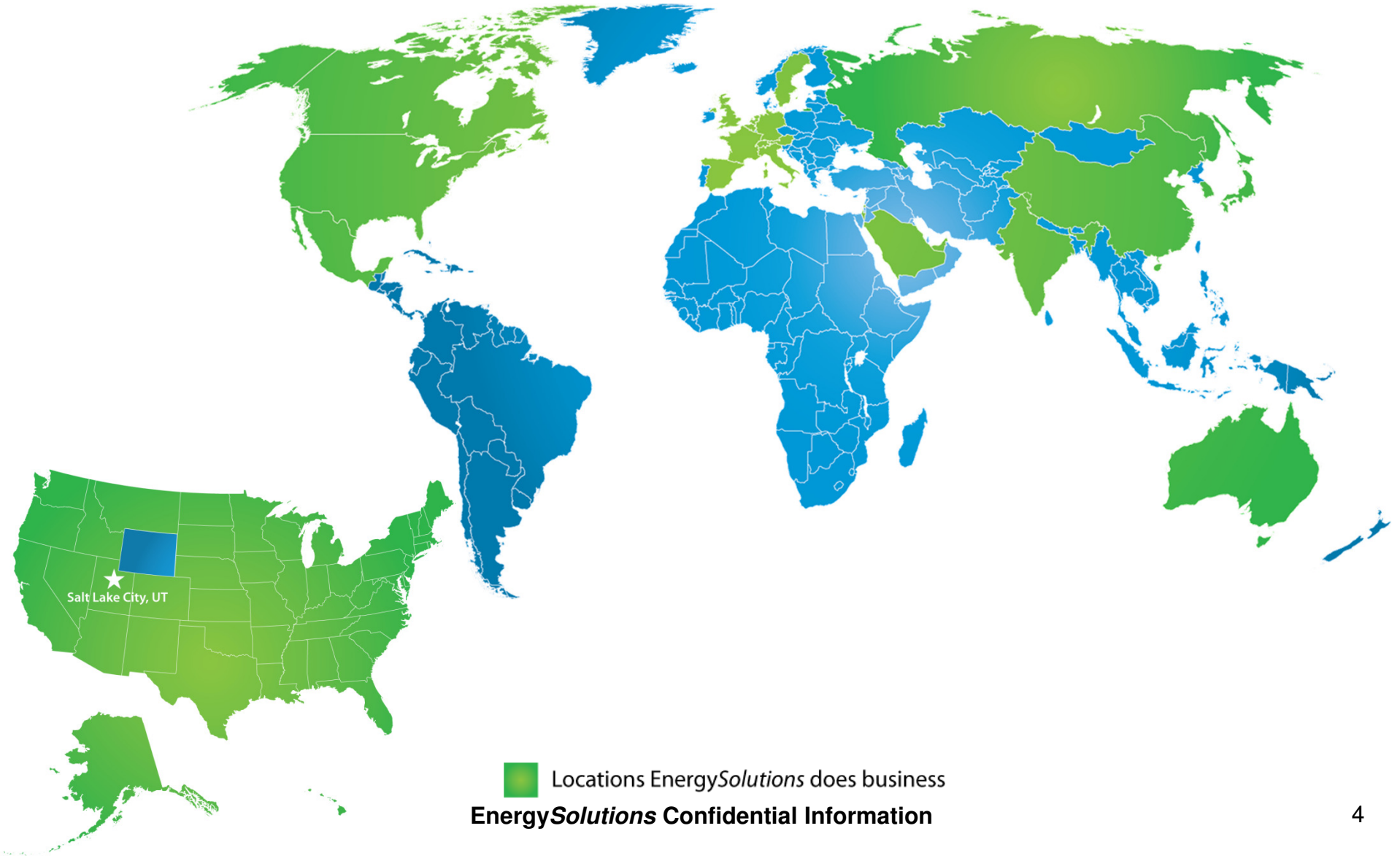
Parallax (December 2006)

Magnox (June 2007)

NUKEM (June 2007)

Monserco (July 2007)

Global Energy*Solutions*



Vertically Integrated Nuclear Services

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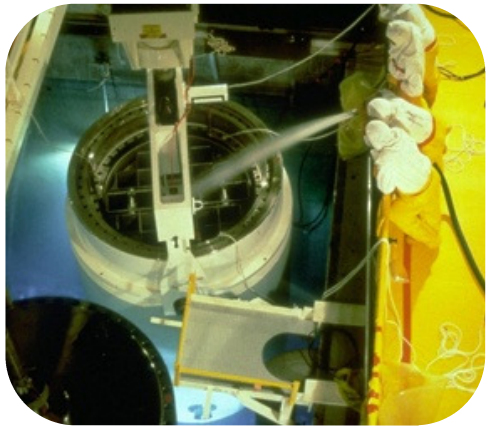
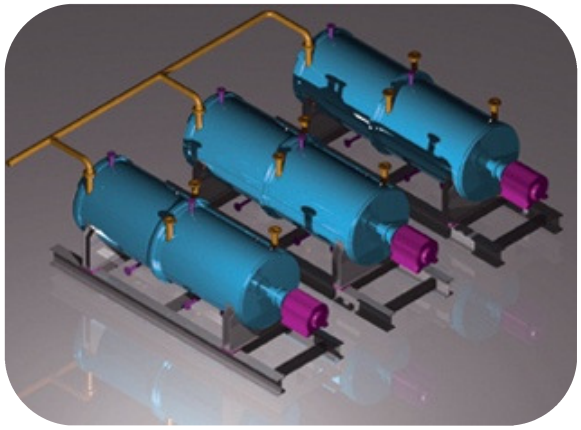
Provide a broad range of nuclear services within a single platform that distinguishes Energy*Solutions* from its competitors

- Nuclear power plant operations
- Specialized nuclear services
- Design & engineering
- Applied engineering & technology
- Proprietary facilities and technology
- Onsite waste management services
- Transportation and logistics
- Spent fuel management
- Processing
- Decontamination & decommissioning

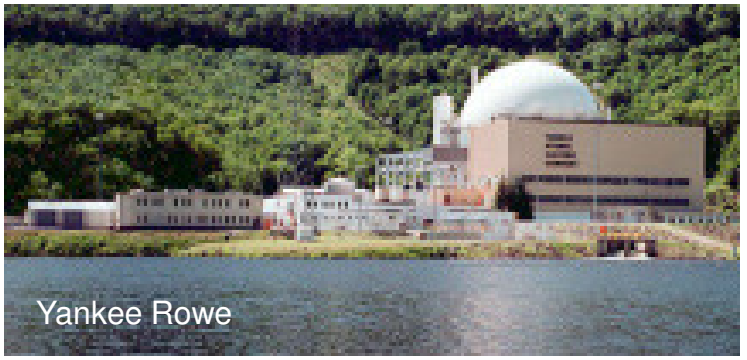




Reactor D&D

LaCrosse

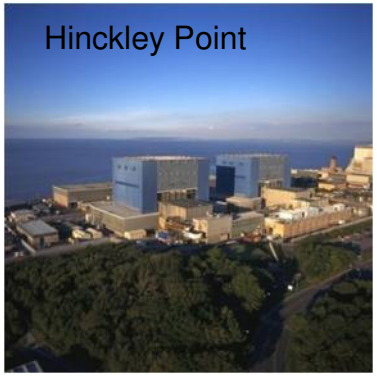
Connecticut Yankee


Yankee Rowe

Maine
Yankee

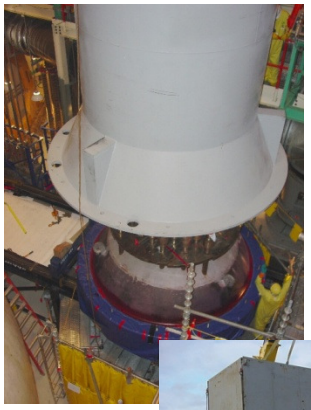
Zion

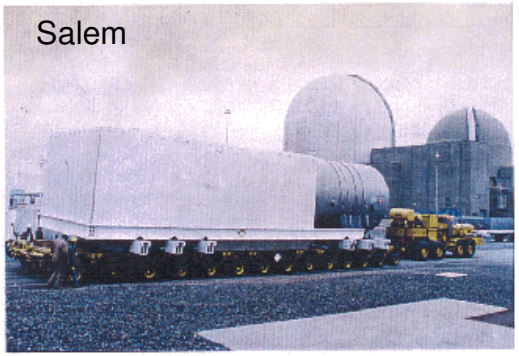
Big Rock Point

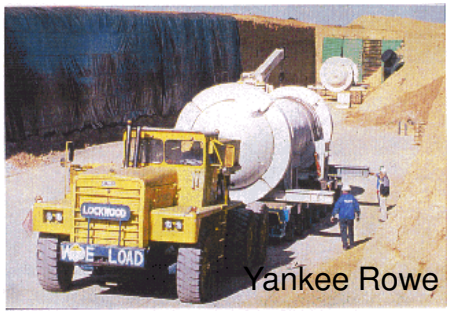

Hinckley Point

Humboldt

Large Components

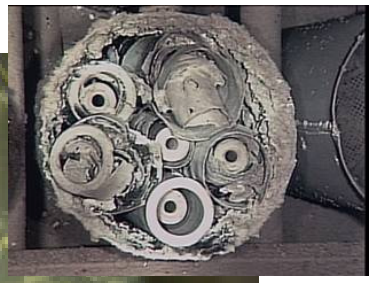




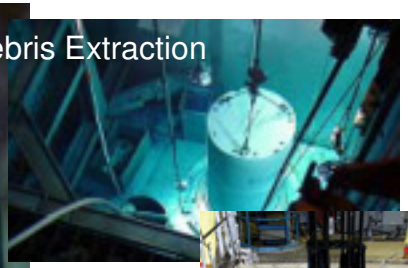


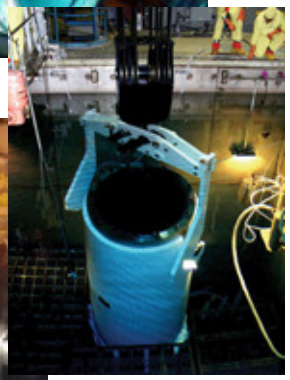
Fuel Pool

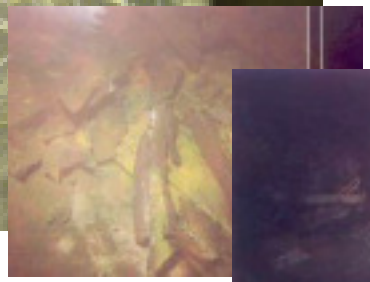
Fuel Sludge Removal

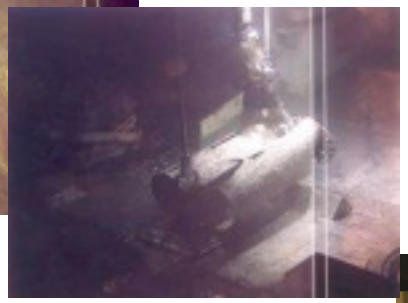


Equipment / Debris Extraction









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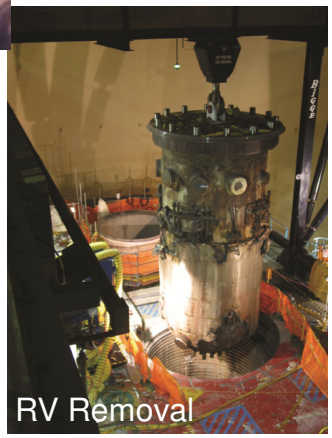
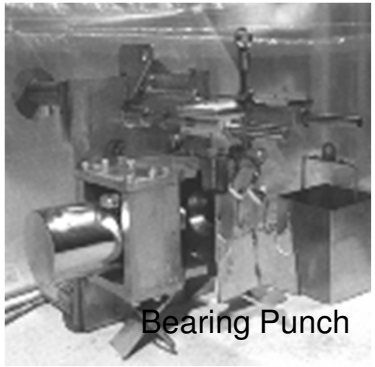

RV Removal

Crusher Shear


Bearing Punch

Containers and Casks

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Material Logistics

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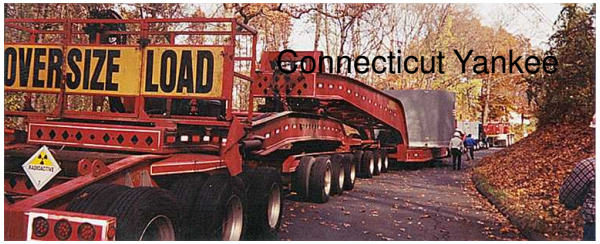

Land Recovery / Remediation

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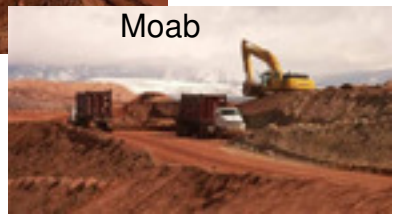

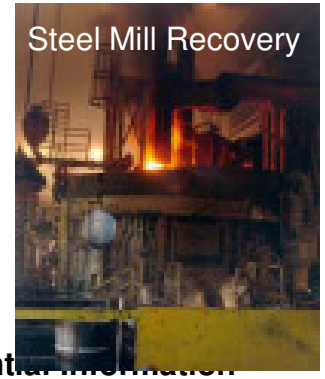

dential information

Disposal

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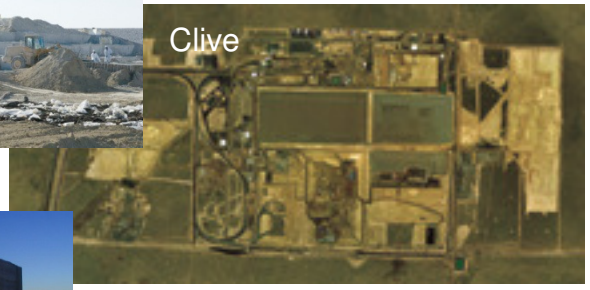

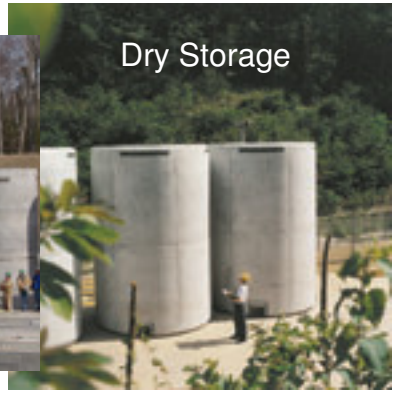

Licensed Processing Facilities

Processing Facility Equipment

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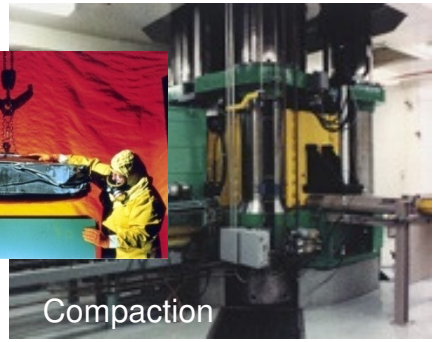
Incineration


Compaction

Liquid Processing

Metal Melt

Rolling

Solid Waste Sorting

Shredding

Rail Car Tipping

Mobile Systems

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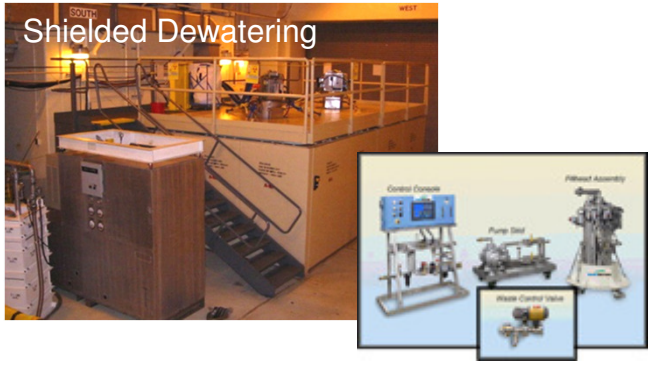

Engineering

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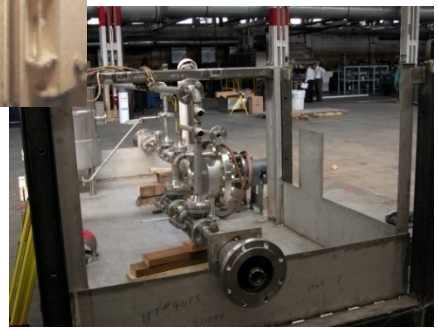
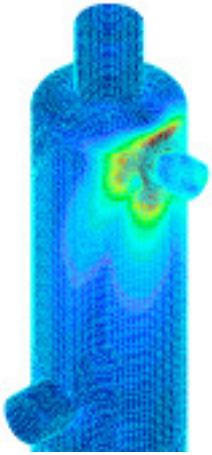
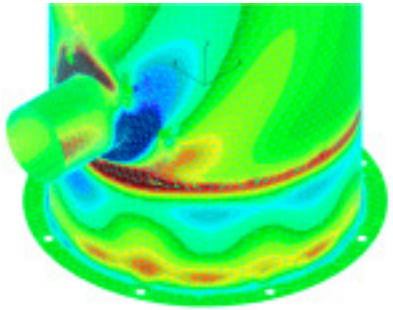
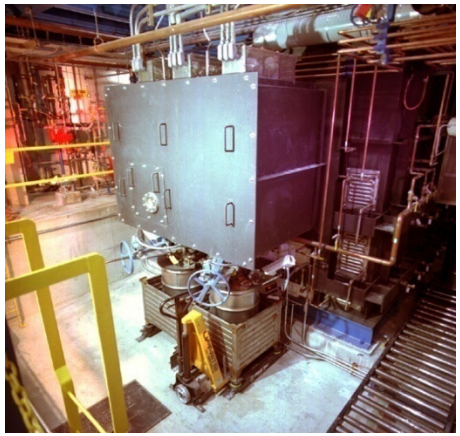
- Chemical & Process Engineering
- Mechanical Engineering
- Structural Engineering
- Nuclear Engineering
- CE&I Engineering
- O&M Modeling
- Safety Baselines / Analysis
- QA





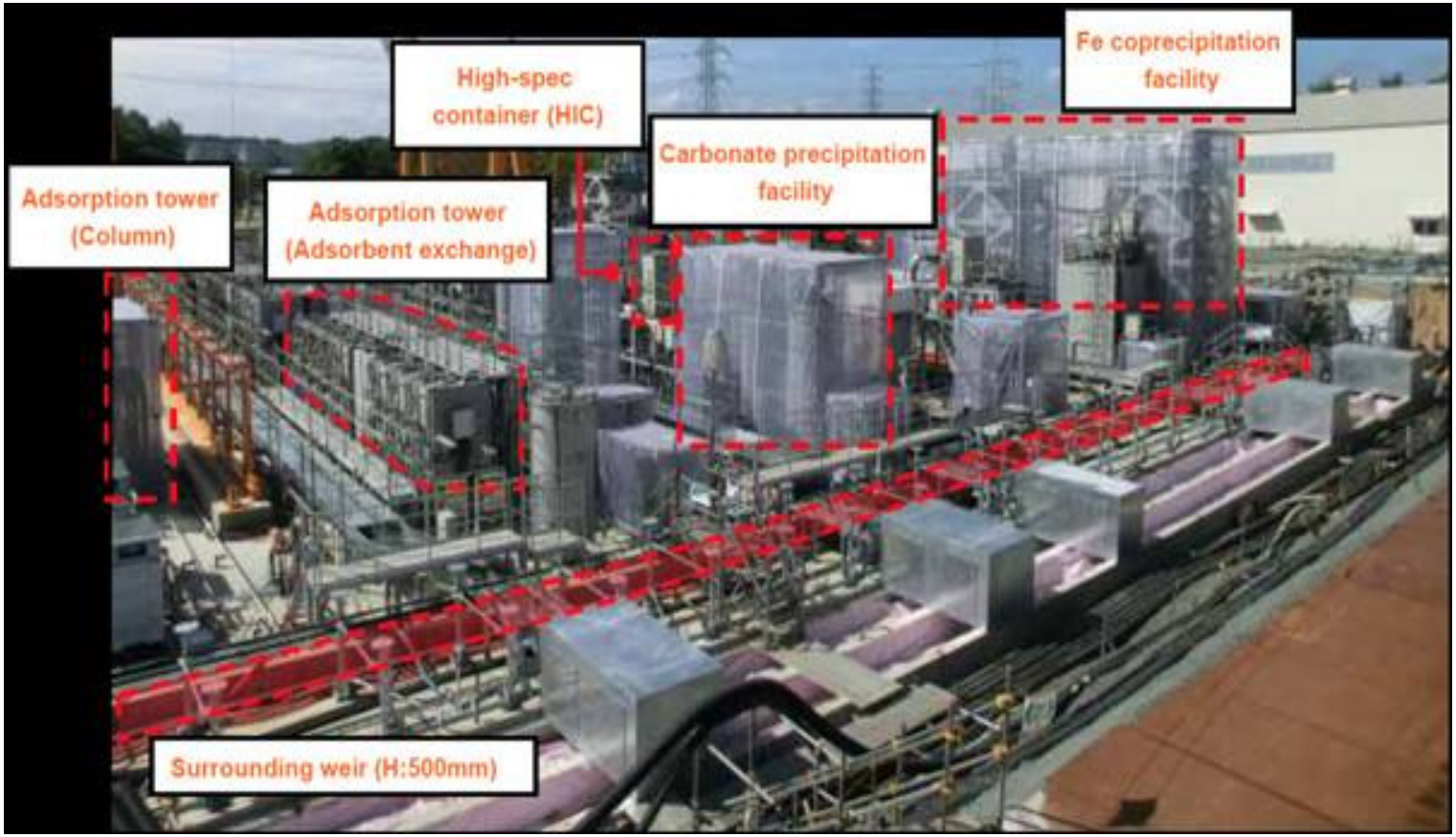




Energy*Solutions* Confidential Information

People

ALPS System (Technology Transfer) Fukushima



Source: TEPCO

Zion Nuclear Station

- Two Unit Pressurized Water Reactor (PWR) Site
  - 1040 megawatts each
- Located 40 Miles North of Chicago in Zion Illinois
- Both Units were Licensed for Operation in 1973
- Permanently Shut Down in January 1998
- Placed in SAFSTOR Status until September 1, 2010

Zion Project Overview

- Zion Nuclear Station's 10 CFR 50 Licenses transferred from Exelon to Zion*Solutions* on September 1, 2010
  - Zion*Solutions* is a subsidiary of Energy*Solutions*
- NDT funds transferred to ES/ZS Trustee
- 10-Year Completion Schedule
  - All work to be completed by 2020
  - 12 years earlier than Exelon's previous schedule

	Exelon's Schedule	Zion*Solutions*' Schedule
D&D Planning Start	2013	2010
D&D Operations Start	~2015	2010
Site Restoration Complete	2032	2020

Readiness for Execution (1)

- History of First of a Kind (FOAK) projects is Extremely Poor
  - Risks and uncertainties continue to be uncovered during execution rather than at inception
  - Pressure to start when not ready
  - Over optimism due to lack of knowledge / experience
  - Knowledge of failures limited to avoid corporate embarrassment
- Many international examples of major D&D failings
  - Bulgaria, Lithuania, Slovakia: 2007 $3.8B, 2013 $7.1B & rising.
  - UK (mainly Sellafield): 2010 $49B, 2013 $106B & rising.
  - Japanese project: at start $550M, now $950M (and not finished)

Readiness for Execution (2)

- Zion:-
  - Plan:
    - $200M < Client Estimate;
    - 12 years < Client Estimate
  - Actual:
    - EAC < Contract Target;
    - 1year earlier than Contract Target

- Zion based on:-
  - Extensive Planning and Due Diligence.
  - Negotiated “Clear End State”.
  - Rigorous development of baseline and control tools.

D&D Cost Reduction

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- Reducing Cost will requires:
  - Learning from experience
  - Shift from a plant “Operations” to a “D&D Project” waste disposal mode of thinking
  - Shift from “Operational” to “Project” decision making and resource management
  - Shift in the tolerance of “perceived” risk and for acceptance of change

There is a window of opportunity to positively influence the overall strategy and cost of D&D in Japan

Decisions made now will be institutionalized into the future

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