



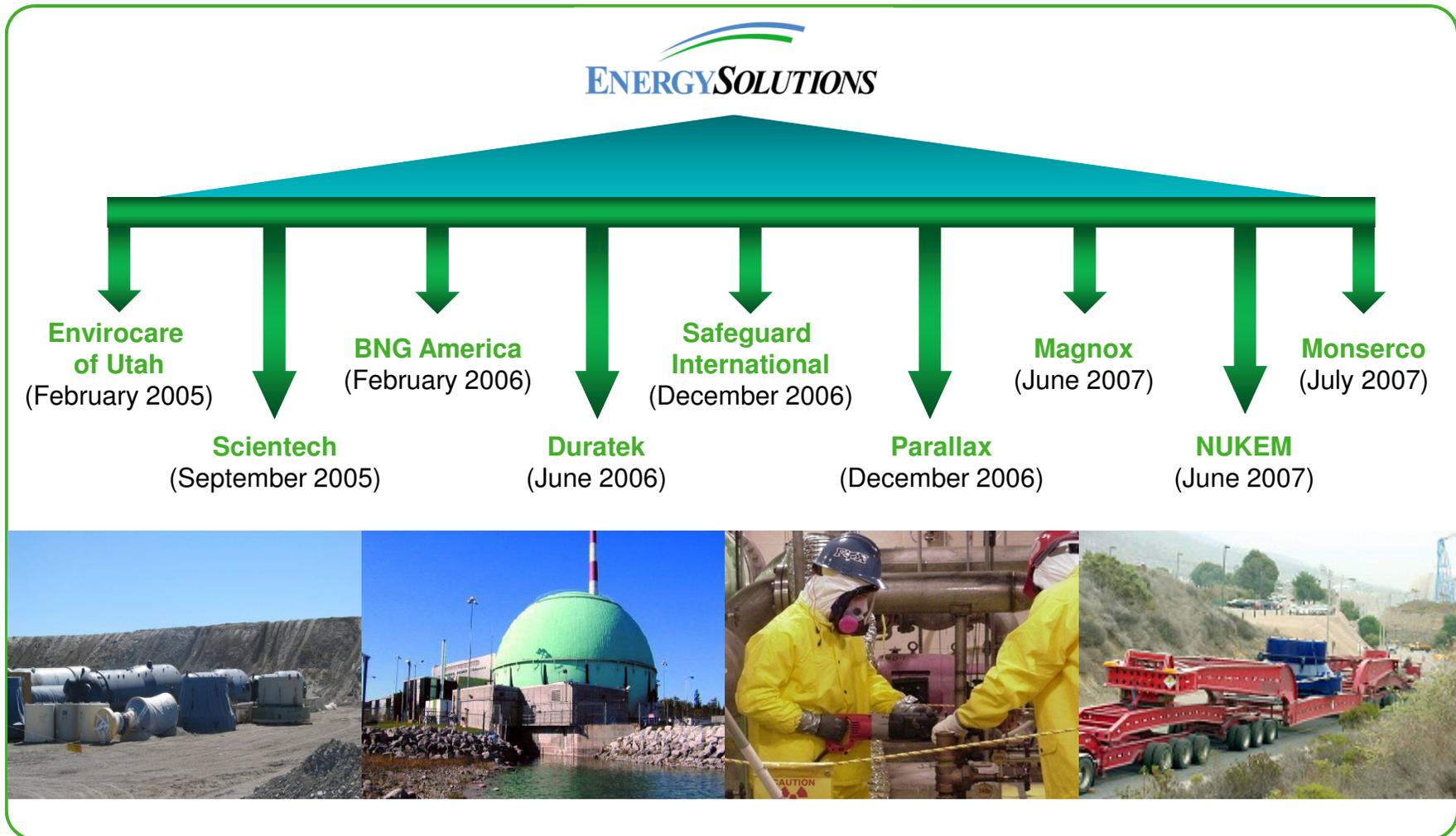
ENERGY*SOLUTIONS*

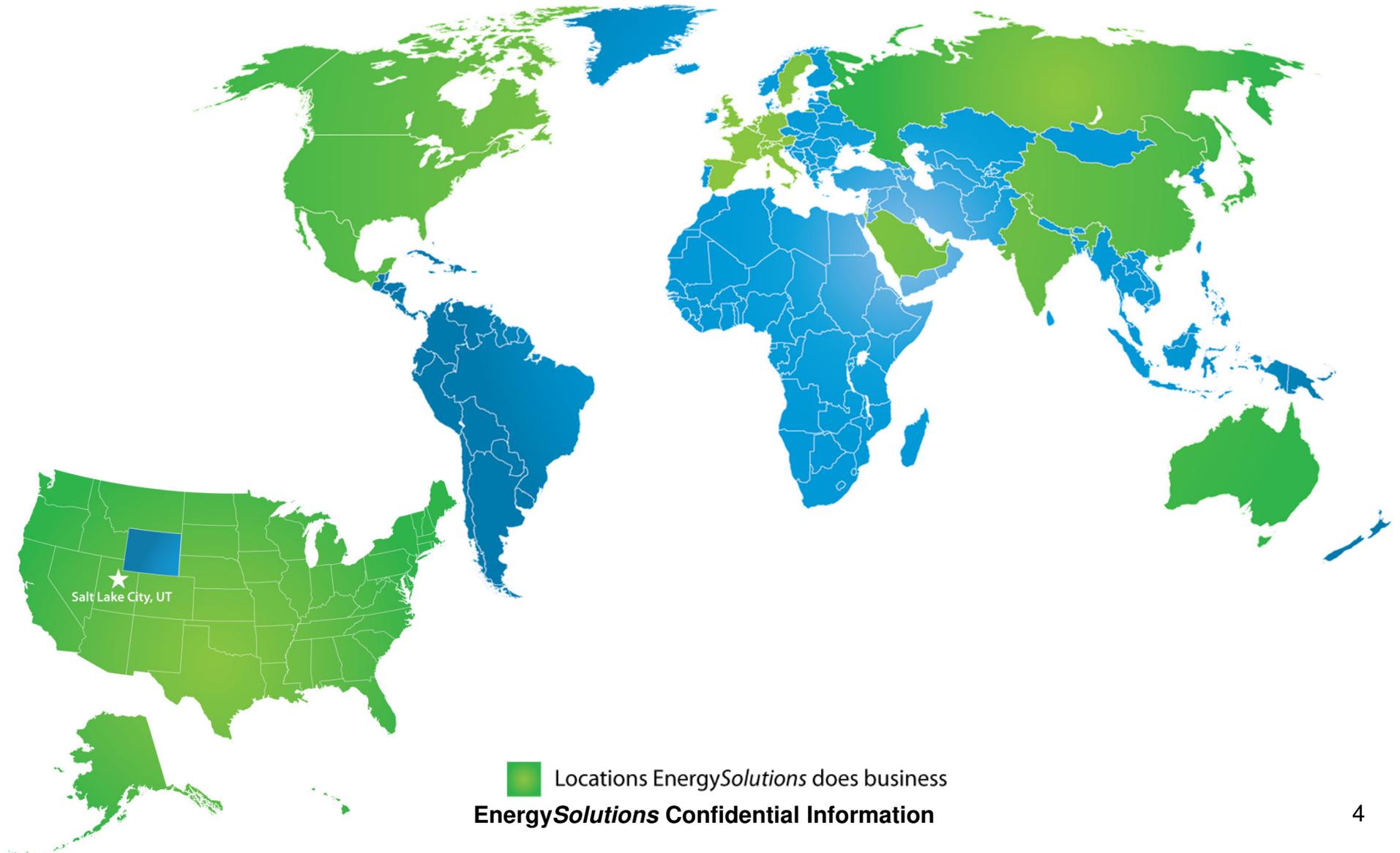
2015 Fukushima Forum

Colin Austin
Energy Solutions

- 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



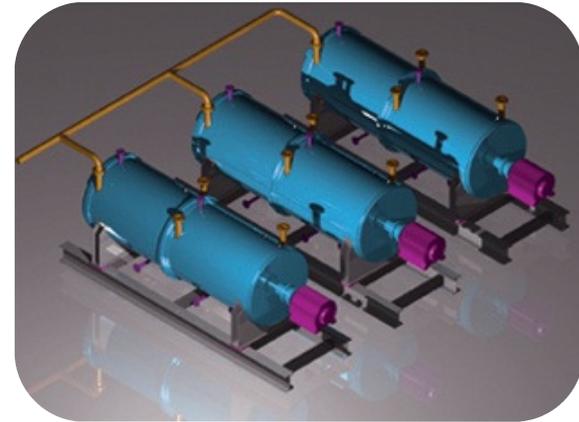


Vertically Integrated Nuclear Services

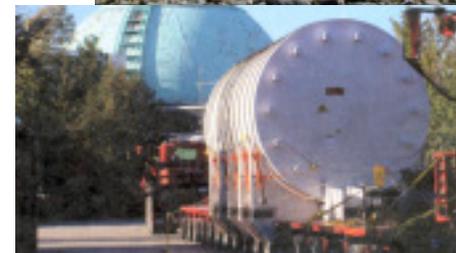
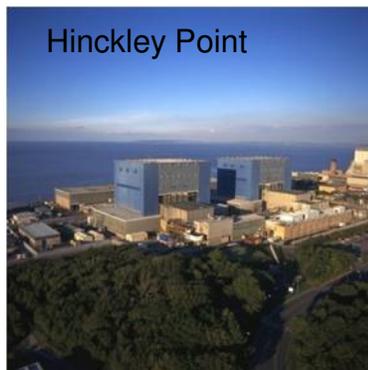
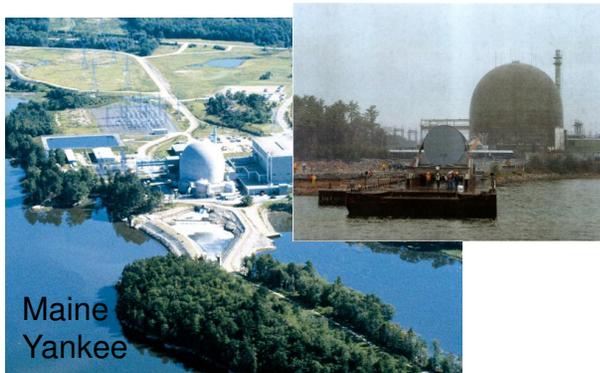
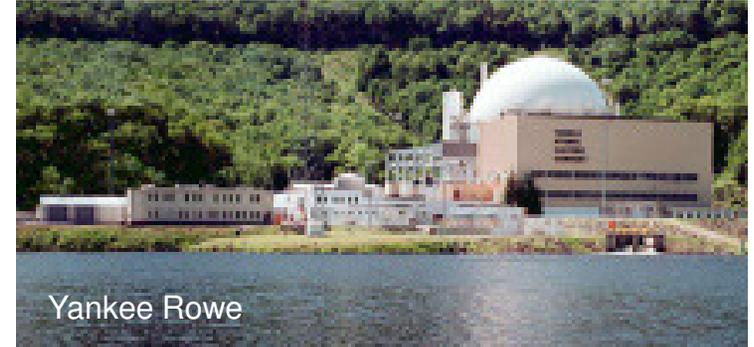


Provide a broad range of nuclear services within a single platform that distinguishes EnergySolutions from its competitors

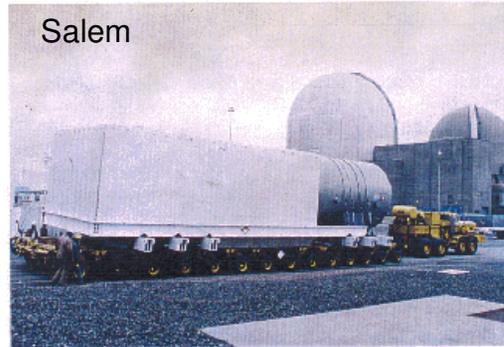
- Nuclear power plant operations
- Specialized nuclear services
- Design & engineering
- Applied engineering & technology
- Proprietary facilities and technology
- Onsite waste management services
- Transportation and logistics
- Spent fuel management
- Processing
- Decontamination & decommissioning



Reactor D&D



Large Components



Fuel Pool

Fuel Sludge Removal



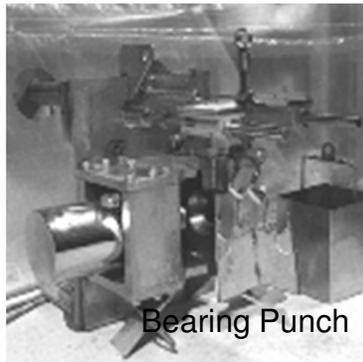
Equipment / Debris Extraction



Crusher Shear



Bearing Punch



RV Removal



Containers and Casks



Material Logistics



LAW BWR



St. Lucie



Maine Yankee



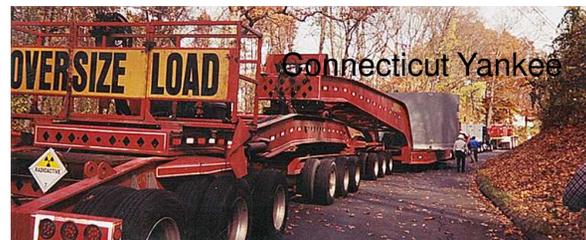
Farley RPVH



Millstone



Prairie Island

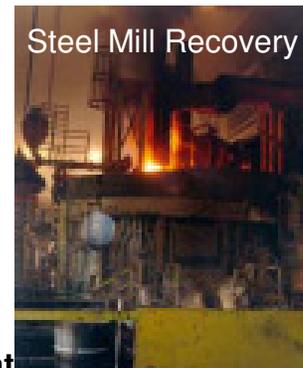


Connecticut Yankee



Army Equip Program

Land Recovery / Remediation



ident...

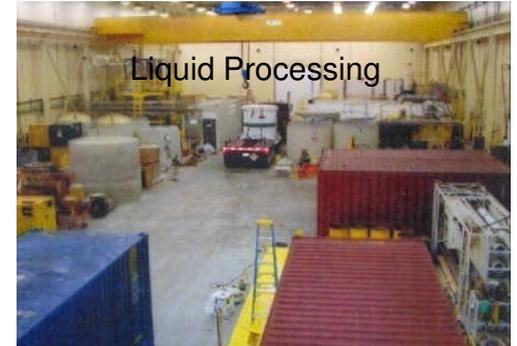
Disposal



Licensed Processing Facilities



Processing Facility Equipment



Confide



Mobile Systems



MUPS



Liquid treatment / solidification



IX



Grouting



Solidification



Mobile Compactor



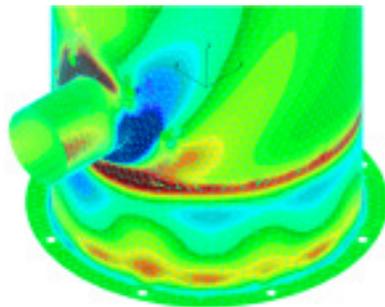
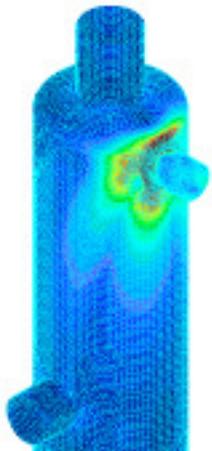
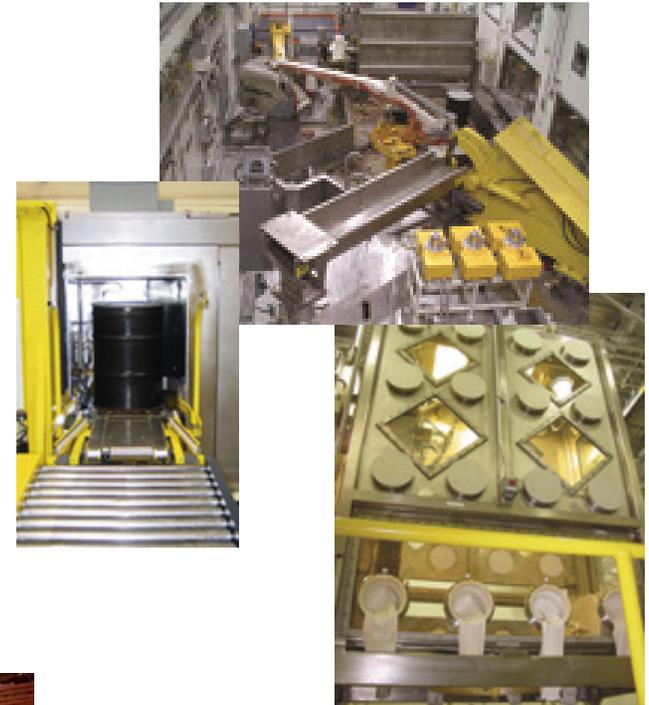
Shielded Dewatering



RO

Engineering

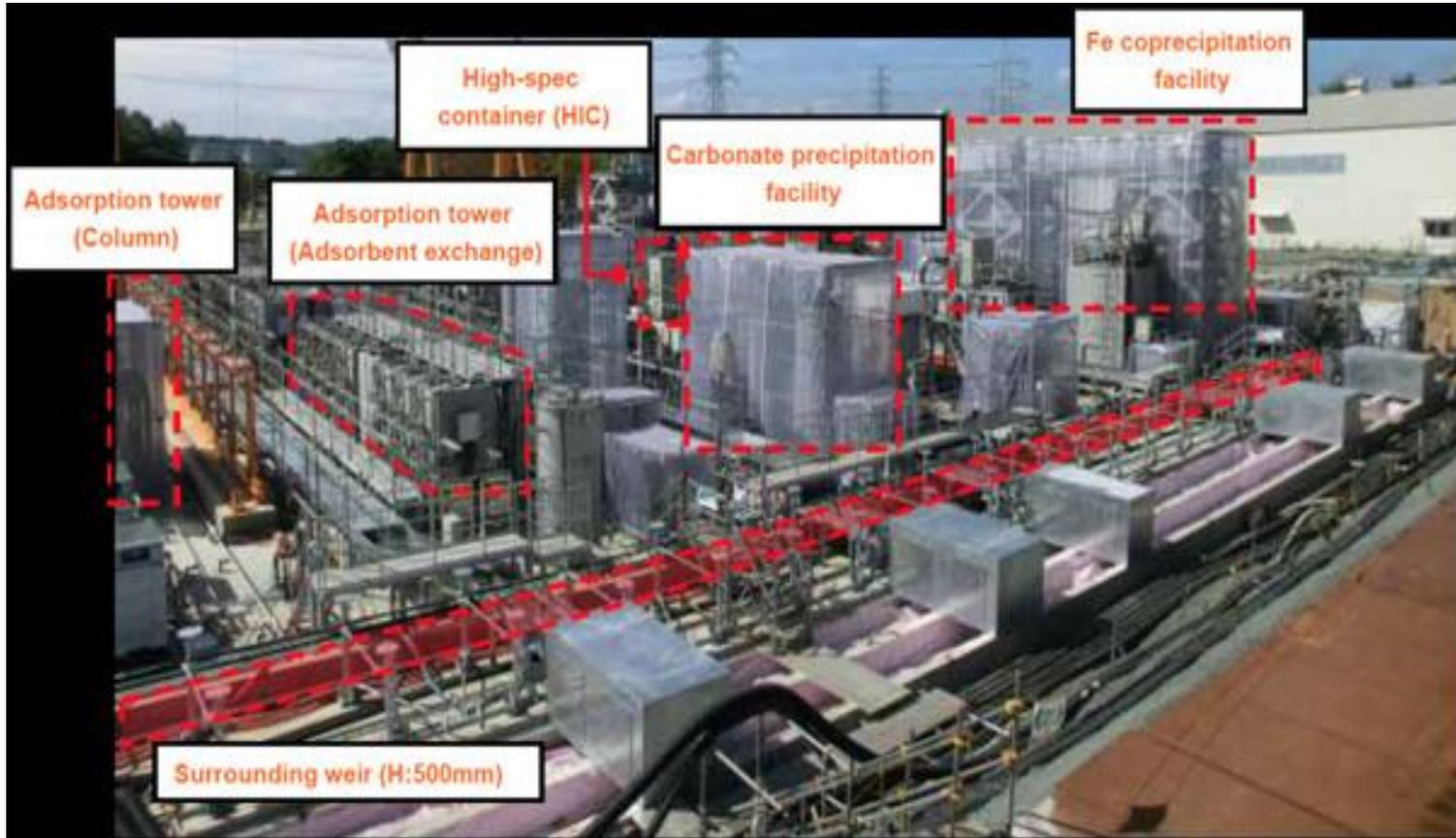
- Chemical & Process Engineering
- Mechanical Engineering
- Structural Engineering
- Nuclear Engineering
- CE&I Engineering
- O&M Modeling
- Safety Baselines / Analysis
- QA



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 *ZionSolutions* on September 1, 2010
 - *ZionSolutions* is a subsidiary of *EnergySolutions*
- 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	<i>ZionSolutions'</i> Schedule
D&D Planning Start	2013	2010
D&D Operations Start	~2015	2010
Site Restoration Complete	2032	2020

- 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)

- 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.

- 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



ENERGYSOLUTIONS