Business Model: Site Decommissioning by Dedicated Decommissioning Licensee

35th INMM Spent Fuel Management Seminar
Decommissioning of Nuclear Plants: Business Model Study

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Discussion Topics:

- Holtec Overview
- US Market Overview
- Decommissioning Strategy
- Fleet Approach
- Decommissioning Organization
- Accomplishments in 2019
- Current and Future Activities
Holtec International: Corporate Profile

- Established in 1986
- Robust safety program
- Strong and effective quality assurance program
- Impeccable on-time delivery record
- Excellent financial strength
- Backlog: 4.0 Billion USD +
- No history of long-term debt
- Self-financed company growth and R&D

Business mix:
- ✓ 90% Nuclear power & nuclear waste
- ✓ 5% Fossil power - combined cycle
- ✓ 5% Renewables - solar, wind, etc.
Site ownership is an integral part of Holtec's long-term strategy
Holtec’s Worldwide Dry Storage and Transport Experience

1,368 Systems Loaded

118 Nuclear Plants Worldwide Rely on Holtec’s Technology for Spent Fuel Storage & Transport;
67 Domestic, 51 International
## Decommissioning Models

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<thead>
<tr>
<th>Model Type</th>
<th>Example</th>
<th>Timeframe</th>
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</thead>
<tbody>
<tr>
<td>Acquisition</td>
<td>Vermont Yankee, Oyster Creek, Pilgrim, Palisades, Indian Point (1-3)</td>
<td>2017 Onwards</td>
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<td>License Stewardship</td>
<td>Zion, Lacrosse BWR</td>
<td>2010 - Current</td>
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<td>Decommissioning Operations Contractor (DOC or Prime Contract)</td>
<td>San Onofre, and initially Maine Yankee &amp; Connecticut Yankee</td>
<td>2016 - San Onofre 1990’s - MY and CY</td>
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<tr>
<td>Self Perform</td>
<td>Big Rock Point, and to conclude Maine Yankee &amp; Connecticut Yankee</td>
<td>1990’s - BRP &amp; Trojan Early 2000 - MY and CY</td>
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Site ownership is an integral part of Holtec's long-term strategy
Holtec Decommissioning Strategy

Establish, Implement & Advance Industry Decommissioning

Fleet Approach
- Based on nuclear industry fleet model
- Drive lessons learned across sites
- Maximize standardization
- Drive technology innovation

Qualified and Experienced Personnel
- Existing Holtec nuclear-experienced personnel
- Additional nuclear plant experienced personnel
- Partner with SNC-Lavalin
- Integrate site organization at license transfer
- Industry vendors

Procedures & Processes
- Adopt NRC-approved site programs, processes and procedures
- Maintain compliance with site license & NRC regulations
- Maintain, protect & control spent nuclear fuel
- Ensure environmental & personnel protection
Accelerated Project Timelines

Time is Money - Typical Accelerated D&D Process ~ 7 years
Building a Fleet

Oyster Creek Nuclear Generating Station
- Fuel Transfer
- D&D/SR
- ISFSI Operations
- LT
- SR
- 2019
- 2021
- 2027
- 2033
- 2034
- 2035

Pilgrim Nuclear Power Station
- Fuel Transfer
- D&D/SR
- ISFSI Operations
- LT
- SR
- 2019
- 2021
- 2027
- 2062
- 2063
- 2064

Indian Point Energy Center (3 units)
- Fuel Transfer
- D&D/SR
- ISFSI Operations
- LT
- SR
- 2021
- 2024
- 2032
- 2060
- 2061
- 2062

Palisades Nuclear Generating Station
- Fuel Transfer
- D&D/SR
- ISFSI Operations
- LT
- SR
- 2022
- 2024
- 2030
- 2068
- 2069
- 2070

Holtec Ownership

D&D Complete/NRC License Amended to ISFSI Only

Site Restoration
Decommissioning Organization

- Wholly-owned Holtec subsidiary
  
  Licensed operator for all decommissioning sites in the Holtec fleet

- Jointly-owned company by Holtec/SNC-Lavalin
  
  Decommissioning General Contractor (DGC) for the Holtec fleet

- Spent fuel management and nuclear services
- Spent fuel cask/storage vendor
- Permanently Shutdown Plant ownership

Provide resources and oversight to support the safe, compliant operation of the acquired sites
Comprehensive Decommissioning International, LLC (CDI) was created in 2018 to provide the accelerated decommissioning of shuttered nuclear power plants. It’s a joint venture between Holtec and SNC Lavalin. CDI’s aims to completely decommission retired nuclear plants in less than eight (8) years leaving only spent fuel storage on site. While we are a new name, we are backed by decades of decommissioning planning and execution experience. We now have a backlog of $5Bn in the US – first nuclear site and license was transferred to Holtec on 1st July 2019. We are now launching CDI internationally to provide foreign utilities with access to our capabilities and experience.
## CDI Worldwide D&D Experience

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<th>Holtec</th>
<th>SNC-Lavalin (Atkins)</th>
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<tr>
<td>▪ 30 years of safe spent nuclear fuel management</td>
<td>▪ Shared heritage of commercial facility D&amp;D at Big Rock Point, Zion and Magnox</td>
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<td>▪ Expertise in design/build on-site fuel storage installations</td>
<td>▪ Over 100 waste cleanup, D&amp;D and government site remediation projects in the US &amp; Canada</td>
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<td>▪ SNF services supplied to over 116 nuclear units worldwide</td>
<td>▪ Waste treatment technologies and new storage/disposal canisters at Fukushima</td>
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<tr>
<td>▪ Innovative solutions for complex challenges</td>
<td>▪ Multiple research reactor decommissioning projects in Canada</td>
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<td>▪ Performs all dry storage implementation work with in-house resources</td>
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Accomplishments in 2019

- Obtained NRC approval to transfer Oyster Creek license (July 2019)
- Obtained NRC approval to transfer Pilgrim license (Sept 2019)
- Awarded contract for segmentation of Oyster Creek reactor pressure vessel and internals. Work has begun.
Current Activities
Site Primary Project Work Streams

Transition/Day 1 Focus Team

- Finalize site organization
- Finalize integration of corporate and site governance
- Focus on successful execution of key transition elements, e.g.:
  - ✔ Staffing including qualifications/training
  - ✔ Programs and procedures to maintain compliance
  - ✔ IT and communications

Decom Project Planning Focus Team

- Develop detailed decommissioning project scope, schedule and cost
- Validate readiness of CDI programs and procedures
- Finalize CDI / vendor contracts for decom activities
- Support the execution of physical plant changes
Future Activities

- Prepare and submit IPEC License Transfer Application and DECON submittals to NRC (shutdown of Unit 2 is April 2020; Unit 3 is April 2021)
- Prepare and submit Palisades License Transfer Application and DECON submittals to NRC (shutdown April 2022)
- Focus on critical path activities – dry fuel storage and RPV segmentation
- Continue efforts to add to fleet (both domestically in US and international)
Thank You!

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