



Transnuclear, Inc.

Forward-looking Energy

Preparing for Life in a Post-ISFSI World

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President & CEO

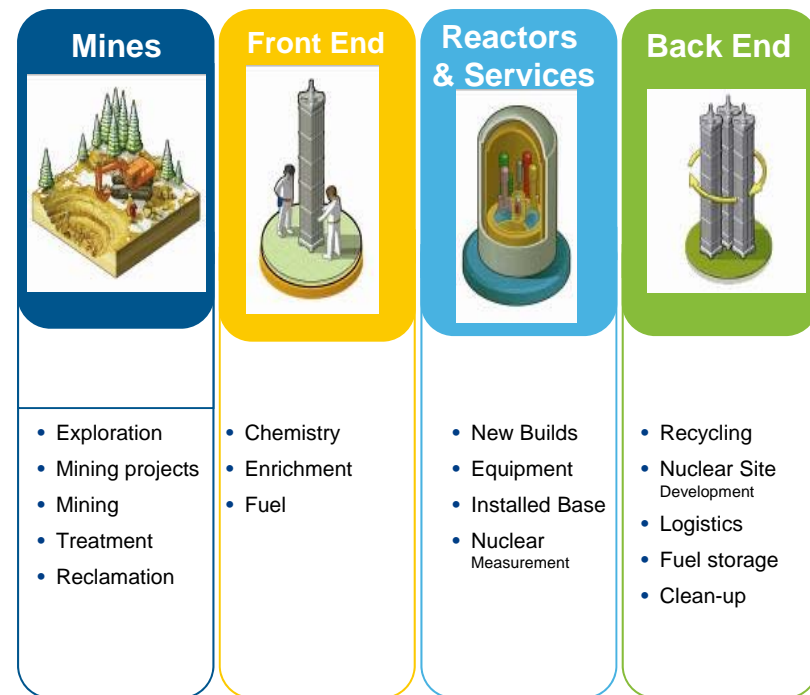
INMM 28th Spent Fuel Management Seminar

Arlington, VA, January 16, 2013

TRANSNUCLEAR Legacy of Performance



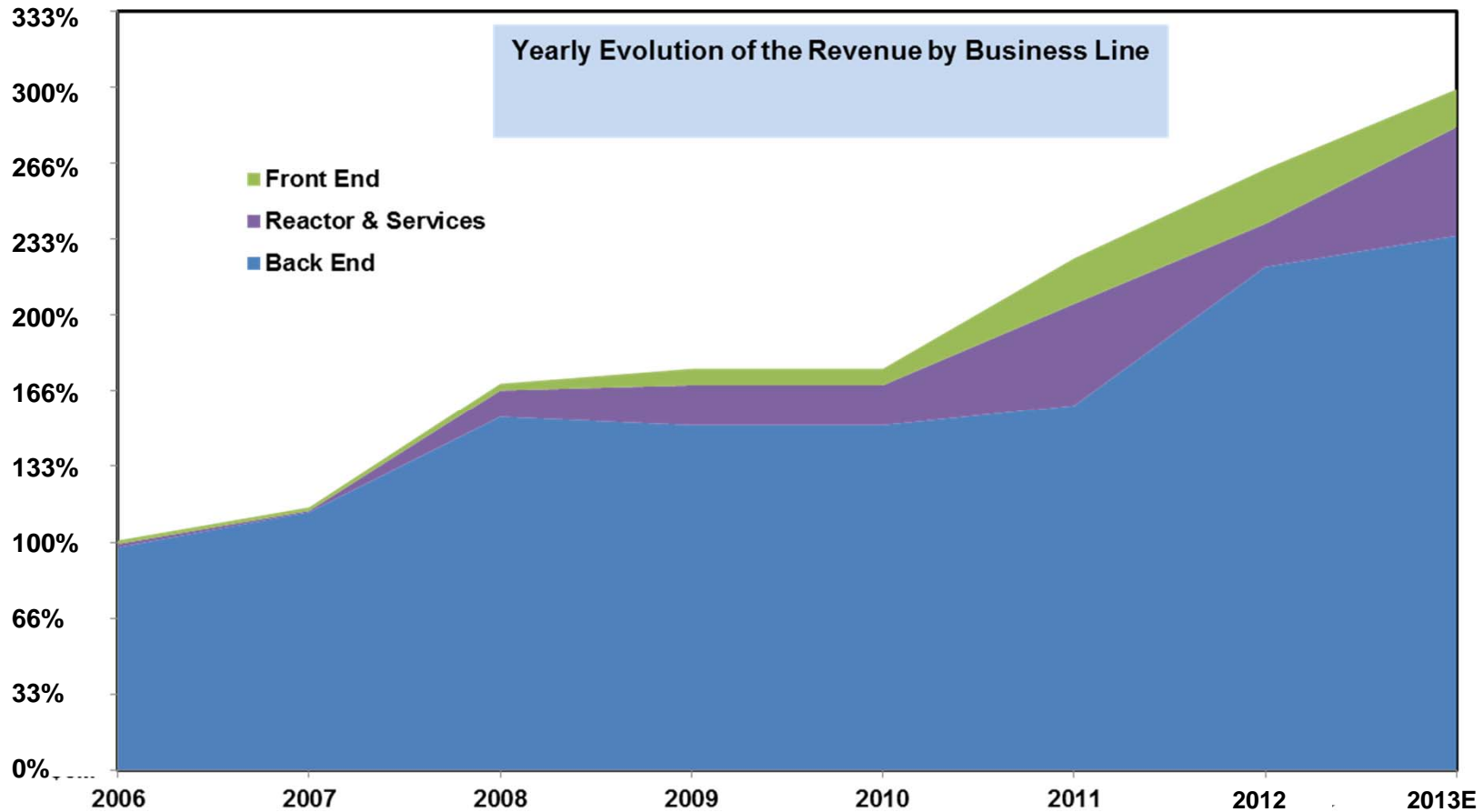
- ▶ Established in 1965 to transport nuclear materials in the US
- ▶ Dry storage since 1985
- ▶ Acquired NUHOMS® in 1998
- ▶ The AREVA advantage...a global network of excellence!
 - ◆ Back End Division
 - ◆ Logistics Business Unit (BUL)



More than 800 Systems Loaded as of December 2012!



Transnuclear Inc. Growth 2006-2013



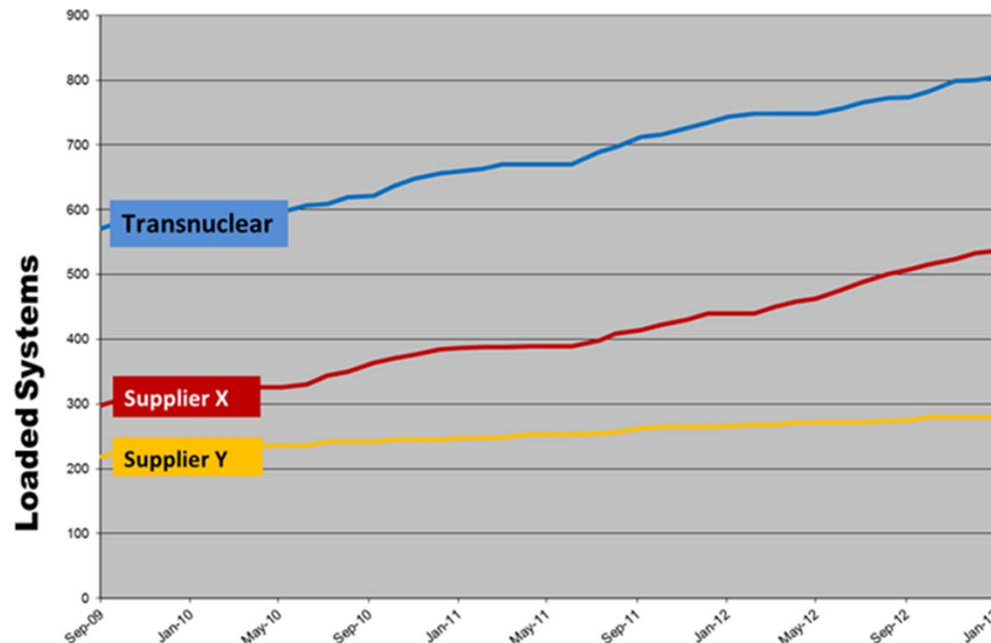
Continued Robust Growth in the Used Fuel Management/Transportation arena



TRANSNUCLEAR: Forward-looking Growth



- ▶ Increased staffing by more than 30 employees to ensure engineering innovation and “as promised” delivery of quality products
- ▶ Continued leadership in dry storage loading



TRANSNUCLEAR: Key Milestones in 2012



- ▶ Experienced strong double-digit growth
- ▶ Successful launch of NUHOMS® University; continued leadership in error-free, low dose, on time “as promised” loading campaigns
- ▶ First successful loading of canisters fabricated at Larsen & Toubro
- ▶ Received CoC for the TN-Long Cask, offering the industry an unparalleled solution for the transport of used nuclear fuel and irradiated waste
- ▶ Acquisition of Columbiana Hi Tech, LLC, a high quality U.S. nuclear component fabricator
- ▶ Introduced NRC to Next Generation NUHOMS®

Significant key successes achieved in 2012

Planning for a Post-ISFSI World



- ▶ **Industry cannot be complacent– we must prepare for the future**
- ▶ **Success in the post-ISFSI world requires leadership in several key areas:**
 - ◆ **Demonstration of long-term safety of interim storage**
 - Data on SCC in marine environments
 - Collection Material properties data for High-Burnup fuel
 - ◆ **Safe transportation of Used Nuclear Fuel (UNF)**
 - ◆ **Implementation of Consolidated Storage**

Planning for Extended Storage



▶ Deploying SaltSmart™ Tools

- ◆ First nuclear supplier to execute salt inspection tooling for DSCs in marine environments
- ◆ Innovative tools and first-of-a-kind inspections successfully deployed in support of ISFSI) license renewal at the end of June 2012.
- ◆ Transnuclear, Inc. designed tools for examining canister surface deposits and temperature in situ, and the training facility to give them a dry run shakedown.
- ◆ 2012 Platts Global Energy Award Finalist

▶ Support for ESCP Extended Storage Demonstration Project

- ◆ Bolted canisters (TN-32) available for High-Burnup fuel extended storage pilot
- ◆ TN-LC for transport of UNF to laboratory facilities
 - HIGHEST CAPACITY NRC-licensed transport cask currently available for this application

Supporting NRC, EPRI, and the DOE efforts to predict, monitor and respond to the behavior of UNF and the dry storage systems for periods as long as 300 years

Implementation of large scale UNF transportation



Transport since
46
year

Over
1,200
tHM/y
transported to
La Hague facility



140
tHM/y
of MOX fuel
transport

Over
250
single transports
per year from EDF
power stations
to La Hague

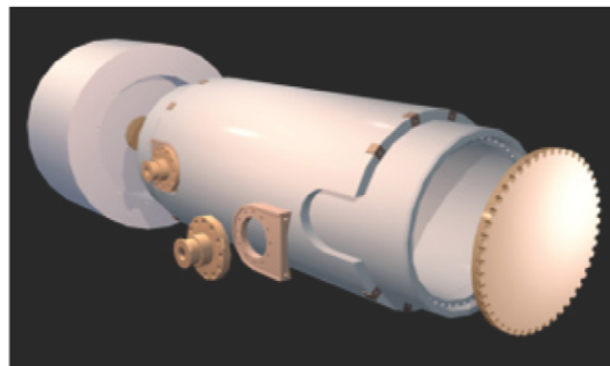
Overseas
transportation
schemes
on a regular basis

Unmatched Global Experience in the Transport of UNF

TN - MP197HB Universal Transport Cask



- ▶ Universal transport cask accommodates fuel from shutdown sites and fuel in storage
- ▶ NRC has issued a U.S. Certificate of Conformance for this transport cask
- ▶ In 2015, Transnuclear will transport used fuel loaded DSCs in this cask
- ▶ Because this cask is licensed, if U.S. customers need to ship DSCs offsite, TN can use the existing transport cask for U.S. customers or fabricate additional casks to support the need.
- ▶ NUHOMS®: No safety related lifts required to insert the DCSs into Transport Casks



MP197HB Transport Cask

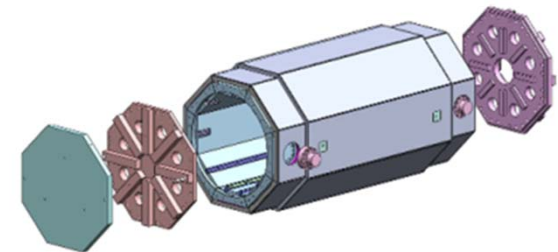


TN NOVA

Flexible and Retrievable System



- ▶ Designed for the safe transportation and vertical storage of a DSC
- ▶ Up to 69 BWR fuel assemblies (up to 16 damaged) with a maximum enrichment / burnup / heat load combination of 5% / 70 GWd/MTU / 32 kW.
- ▶ Comprised of MP197HB transport cask, 69BTH DSC, TN NOVA overpack
- ▶ Licensed for the MP197HB transport cask loaded with a 69BTH DSC for 45 GWd/MTU maximum
- ▶ A US license extension for burnups up to 70 GWd/MTU under NRC review
- ▶ Retrievable System ... the fuel assemblies or the whole DSC can ultimately be stored in a final geological repository



TN NOVA

Small footprint, cost-effective!

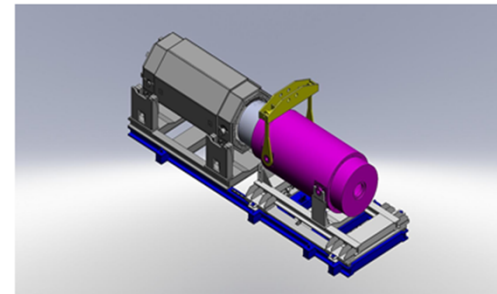


TN NOVA Advantages

- ▶ Transport and storage functions are separate, making the system flexible
- ▶ Licensed to transport several canister types
- ▶ Simple transfer procedure from the MP197HB transportation cask to TN NOVA overpack
- ▶ Takes full advantage of TN's experience with welded canisters (more than 500 loaded)
- ▶ Favorable for the thermal performance (vertical with free convection around the DSC within the TN NOVA)

TN NOVA system transferring from an MP197HP Transportable cask (part 71)

**Successfully tested for
a simulated aircraft impact!**



Summary – Investing and preparing in the future



- ▶ Hiring professionals with the expertise and integrity that meets customer requirements and high industry standards
- ▶ Acquisition of Columbiana Hi Tech (CHT), to ensure cost-effective innovation
- ▶ Strong support for ESCP initiatives
- ▶ Design and licensing of TN-Long Cask to accommodate fuel pins and assemblies <14 feet
- ▶ Design and licensing of MP 197HB to meet anticipated need for universal transport capability
- ▶ Design and licensing of TN NOVA as a cost effective system for Consolidated Storage
- ▶ “Real time, real life” training program to prepare the workforce for minimal human error



BACKUP

Delivering Industry Solutions



- ▶ **Safe and secure storage and transport of nuclear materials with robust margins in hardware, licensing, analytical design and human performance**
- ▶ **Innovative designs that have demonstrated safe performance in a beyond-design basis earthquake**
- ▶ **Commitment and workforce pride in low doses at the ISFSI and during loading operations**
- ▶ **Unparalleled UNF transportation experience and equipment designed and available for “post-ISFSI” operations**
- ▶ **Talent ...teamwork that guarantees “As Promised” results!**

Thought Leadership... Planning for Life After ISFSI



- ▶ **Simpler canister basket and transfer cask designs for faster fabrication**
- ▶ **Higher capacity, higher decay heat DSCs and HSMs**
- ▶ **Cask-HSM alignment by 3D laser mapping**
- ▶ **Enhanced concrete mixes for improved resistance to impact and maintenance-free long term storage**
- ▶ **Canisters designed for resistance to stress corrosion cracking over very long term storage in marine atmospheres**
- ▶ **Improved low waste method of producing near net size shapes of neutron absorbing metal matrix composites (MMCs)**

Call to Action!



▶ **Prepare for extended storage**

- ◆ **Extended storage using TN-32s**
- ◆ **Robust demonstration of TN-40s**
 - Bolted cask design enables ease of demonstration
- ◆ **Saltsmart ® Tool for monitoring long term**

▶ **Position for consolidated storage and transportation requirements**

- ◆ **MP197HB for moving customized fuel to standard sites**