
AREVA
forward-looking energy

Transportation Readiness

Mike Valenzano
Director, Transportation – Transnuclear, Inc.
NEI Used Fuel Management Conference, May 2013

Logistics Business Unit

AREVA
forward-looking energy

Agenda

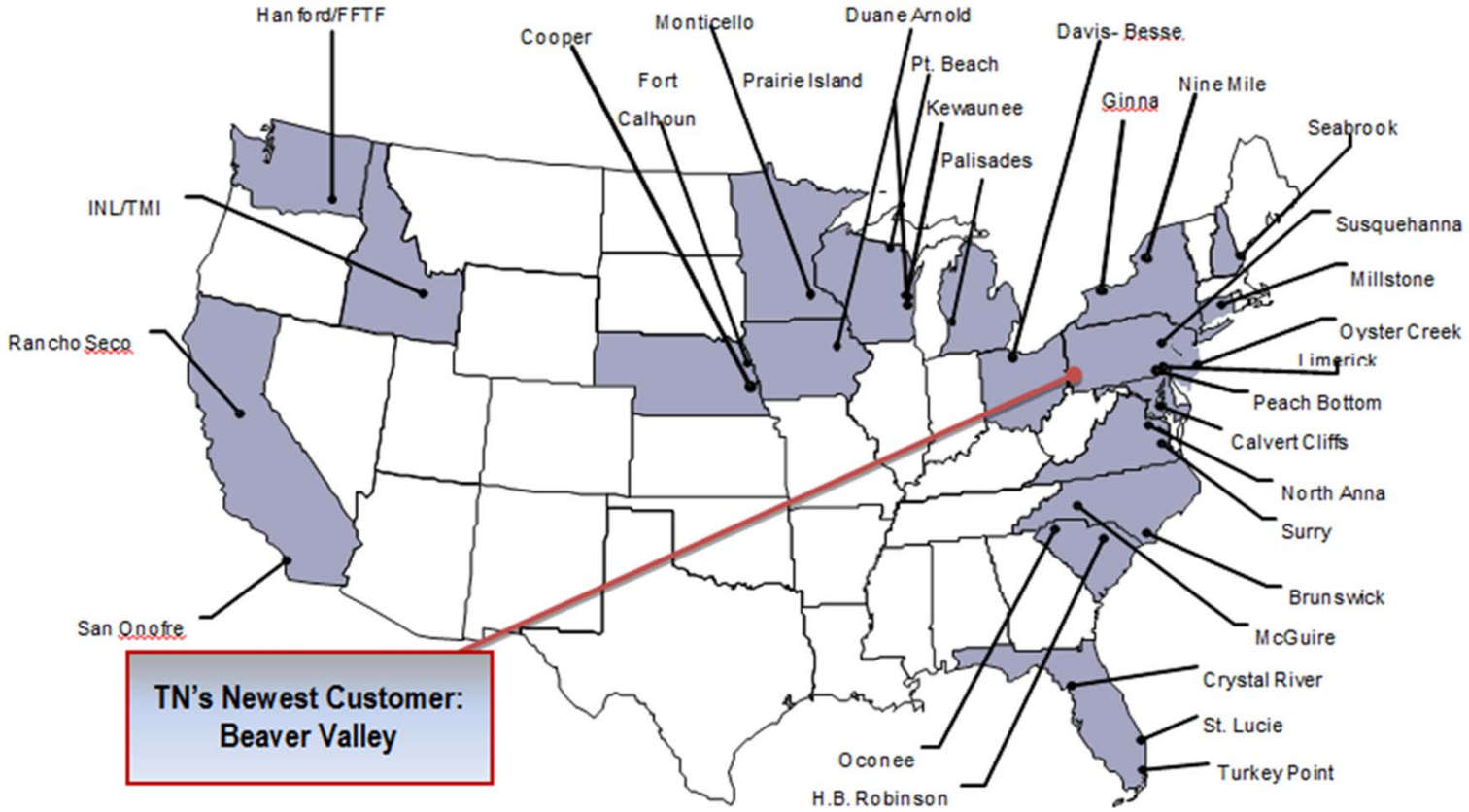
- AREVA Logistics Business Unit
- Transnuclear, Inc. Storage Systems in U.S.
- Transnuclear, Inc. Transport Systems
- General Preparation for Transport
- Road, Barge, Rail Transport
- Rancho Seco
- Summary

AREVA Logistics Business Unit



- **Conducts approximately 4,000 transports each year**
  - **More than 200 transports of used fuel (France and Europe) and of vitrified and compacted waste (Europe and Japan)**
  - **More than 150 MOX fuel transports**
  - **More than 300 transports of low level waste**
  - **More than 2,700 front-end (U_3O_8, UF_6, UO_2) transports**
  - **More than 400 transports of heavy industrial equipment**
  - **Around 150 transports for research reactors and laboratories, including used fuel**

Transnuclear, Inc…the U.S. Leader in Dry Fuel Storage Systems



32 customer sites and more than 800 systems loaded!

Transnuclear, Inc. Storage Systems in the U.S.

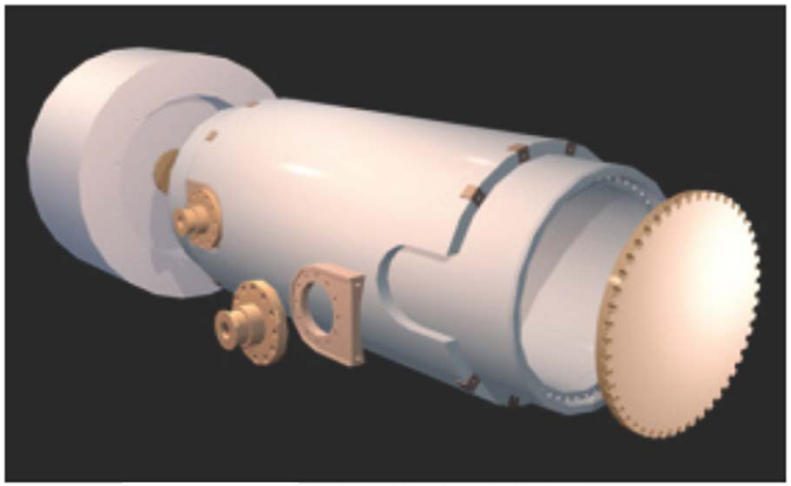
Cask System	Fuel Type	Systems Deployed
NUHOMS®	PWR	491
NUHOMS®	BWR	165
TN-32	PWR	63
TN-40	PWR	29
TN-68	BWR	59
TOTAL*		807

*As of April 2013

29,765 UNF assemblies or approximately 9,500 MTU

Transnuclear, Inc. Transport Systems

- **MP187**
  - **NUHOMS® system transport cask applicable to PWR Dry Shielded Canisters (DSCs)**
  - **One MP187 cask has been fabricated and delivered to Rancho Seco for use as a transfer cask on site (22 DSCs were loaded)**
- **MP197HB**
  - **NUHOMS® system transport cask applicable to both BWR and PWR DSCs and Radioactive Waste Canisters (RWCs)**
  - **One MP197HB cask is being fabricated now!**



MP197HB Transport Cask

Transnuclear, Inc. Transport Systems

- **TN-32, TN-40, TN-68**
  - **Dual-purpose, metal casks**
  - **TN-40 and TN-68 are NRC certified for transport**
  - **TN-32 has not yet been certified for transport due to lack of commercial need**

TN-32 CASK

General Preparation for Transport

- **Fabricate transport casks for NUHOMS® DSCs**
  - **Estimate 24 months/cask fabrication, including ancillary equipment**
  - **3-4 casks/year**
  - **Transport cask types depend on sites identified for removal of UNF**
  - **Quantity depends on target delivery rates to destination**
- **Fabricate impact limiters and ancillary equipment for metal casks**
  - **Estimate 6-12 months per set of impact limiters and skids**
  - **Quantity depends on target delivery rates to destination**
- **Assess transport routes: sites to destination**
  - **Modes of transport required → conveyances**
  - **Security assessment**
  - **Transport planning**
  - **Stakeholder coordination**
- **Procure carrier services and/or conveyances**

Road Transport

- **Heavy-haul tractor-trailers (HHT)**
  - **Commercial carrier service could support inter-modal transfer, as needed**
  - **Not recommended for long haul transports, but feasible**

An Empty Transnuclear TN-32 Cask is Transported on a Miller Transport Heavy-Haul Tractor-Trailer

Barge Transport

- **An alternative to HHT for inter-modal transfer from power plant sites to nearest railhead**
- **A potential alternative to rail transport for some sites if destination is convenient to waterway**

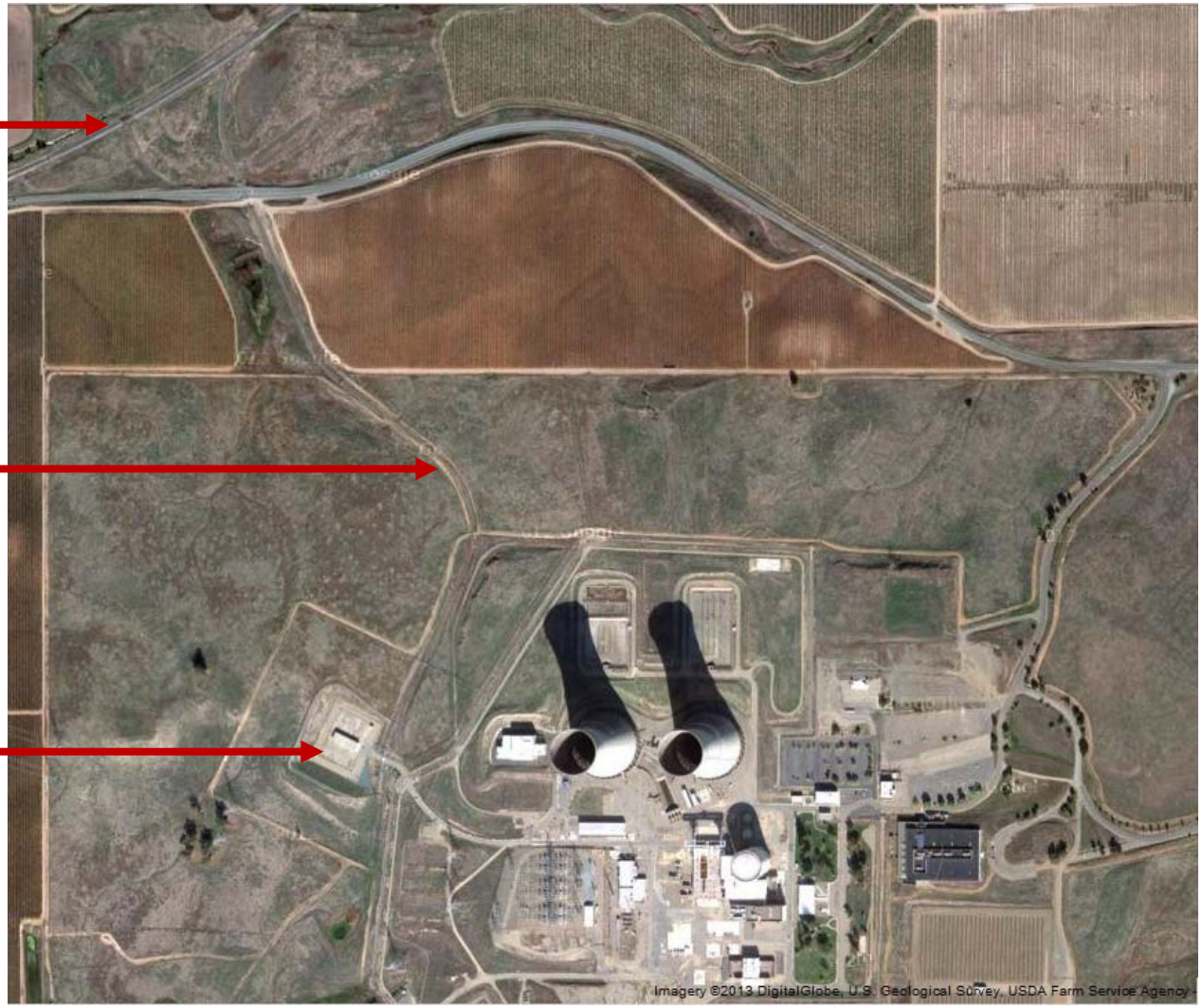
Heavy-Haul Only	Barge Optional
Beaver Valley	Browns Ferry
Big Rock Point	Calvert Cliffs
Callaway	Cooper
Diablo Canyon	Grand Gulf
Indian Point	Haddam Neck (Conn. Yankee)
Kewaunee	Hope Creek
Oconee	Humboldt Bay
Palisades	Oyster Creek
Peach Bottom	Salem
Point Beach	St. Lucie
Yankee Rowe	Surry

Rail Transport

- **DOE has previously committed to use rail cars that comply with Association of American Railroads (AAR) Standard S-2043, *Performance Specification For Trains Used To Carry High-Level Radioactive Material***
  - **1,000,000 lb. buff strength for car designs**
  - **Performance monitoring for the dynamic status of the cars**
  - **Electronically Controlled Pneumatic (ECP) braking equipment on all cars**
  - **Truck and suspension redesign and optimization to improve steering, reduce truck warp and provide good wheel load equalization**
  - **Prototype cars (1 ea.) will go through single car testing and consist testing for a period of 16 –18 months**
- **DOE previous estimates for specification, design, fabrication & testing of S-2043 rail car <u>prototypes</u> were 5+ years**

S-2043 rail car production would be critical path

Rancho Seco


UP Railroad
Rancho Seco Rail Spur
Rancho Seco ISFSI
Imagery ©2013 DigitalGlobe, U.S. Geological Survey, USDA Farm Service Agency

Rancho Seco and the MP187… A Great Solution!

- **MP187 transport cask already fabricated and available**
  - **Minor licensing work required to update CoC 9255 (expires Nov. 2013)**
  - **Fabrication of impact limiters and transportation skid to secure to conveyances**
  - **Minimal additional equipment needed: DSC transfers directly from storage module to transport cask using available TN equipment**

Summary

- **AREVA Logistics Business Unit has extensive experience in transport of used nuclear fuel**
- **Transnuclear, Inc. systems are available to support transport in the U.S. with order for fabrication and, in some cases, minor licensing actions**
- **MP187 transport cask could be used in relatively short timeframe to transport Rancho Seco DSCs or other PWR plant DSCs**
- **Transportation infrastructure constraints and conveyances could present the most significant logistics challenges and deserve attention**

Transportation Readiness

Mike Valenzano
Director, Transportation – Transnuclear, Inc.
NEI Used Fuel Management Conference, May 2013

Logistics Business Unit

AREVA
forward-looking energy