NUHOMS® EOS
Extended Optimized Storage

Light years ahead!

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AREVA TN Americas

- **Established in 1965 to transport nuclear materials in the U.S.**
- **AREVA TN manages globally more than 6,000 shipments of radioactive materials every year by road, rail and sea**
- **Dry storage since 1985**
- **Acquired high-performance NUHOMS® horizontal system in 1998**
- **Market leader with more than 900 systems loaded in the U.S.**

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Outline of the Presentation

- The NUHOMS® EOS System
- NUHOMS® EOS Innovations
- NUHOMS® EOS Design Philosophy
- EOS 37PTH and EOS 89BTH DSCs
- NUHOMS® EOS Inspection
- NUHOMS® EOS Corrosion Proof
- Conclusions

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The NUHOMS® EOS System

- The Next Evolution in Dry Storage from AREVA TN
- Result of Significant Innovation in Dry Storage Technology
- High Capacity, High Heat Load - BWR and PWR Systems
- Still based on Low Risk, Horizontal Storage Concept
- Licensing Application Submitted to NRC – December 2014
- NUHOMS® EOS Available 2017

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NUHOMS® EOS Innovations

- Highest capacity and highest heat load in industry
- EOS 37PTH for PWR and EOS 89BTH for BWR
- EOS-HSM is optimized for heat transfer and shielding
- Built-in inspection port built for ease and effectiveness of long-term aging management
- Duplex stainless steel canisters ensure corrosion proof system for plants in marine environments
- Building enclosure for plants located in geographic areas where physical appearance is important

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NUHOMS® EOS Innovations

- Basket Design Streamlined for ease of fabrication
- Innovative non-welded, high strength low alloy basket
- Basket Heat Transfer Characterized by Conduction and Radiation
- Increased Heat Rejection to 50 kW with significant margin to safety
- EOS-HSM Airflow Path Optimized to achieve the most efficient heat rejection capability and offer the best shielding performance

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NUHOMS® EOS Design Philosophy

- **Still Above Ground, Still Horizontal**
- **Maximizing Thermal Margins**
  - Basket Heat Transfer does not require Internal Convection
  - Low Helium Backfill Pressure
  - Fuel Cladding Temperature not affected by Helium within DSC Cavity
- **Maximizing ISFSI Operational Performance**
  - Ease of DSC insertion and withdrawal
  - No Lifting of a Loaded DSC
  - Same Footprint as existing HSM-H Design
  - No change to DSC heat removal Air Flow Paths
  - Still Free Standing and compatible with existing HSM arrays

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NUHOMS® EOS Design Philosophy

- **Reinforcing the NUHOMS® Advantage**
  - Simplicity – Construction and Operation
  - Lowest Risk
  - Highest Seismic Capability
  - Lowest Dose
  - Secure Protection from Environmental Hazards
  - Axial Position of the DSC above the ground makes is practically immune to effects of flooding, including “smart flood” or “smart wind”
  - Licensing Basis Evaluations do not result in any Site-Specific or “Licensee Required” Analysis for Operational Evolutions
  - Ease of Inspections for Aging Management – DSC is not lifted

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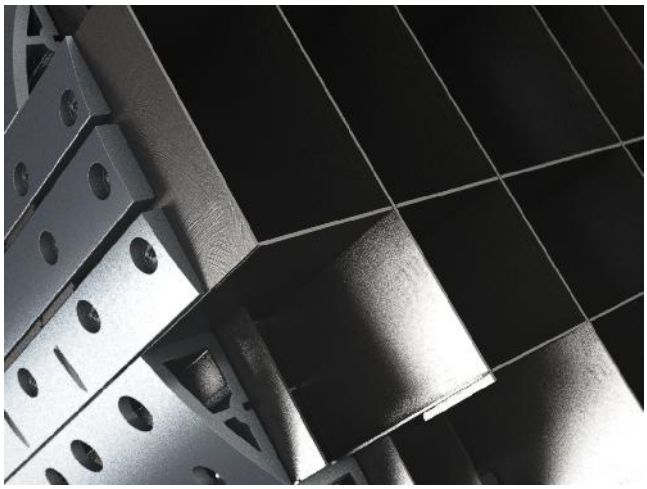
NUHOMS® EOS
State-of-the-Art Basket Design



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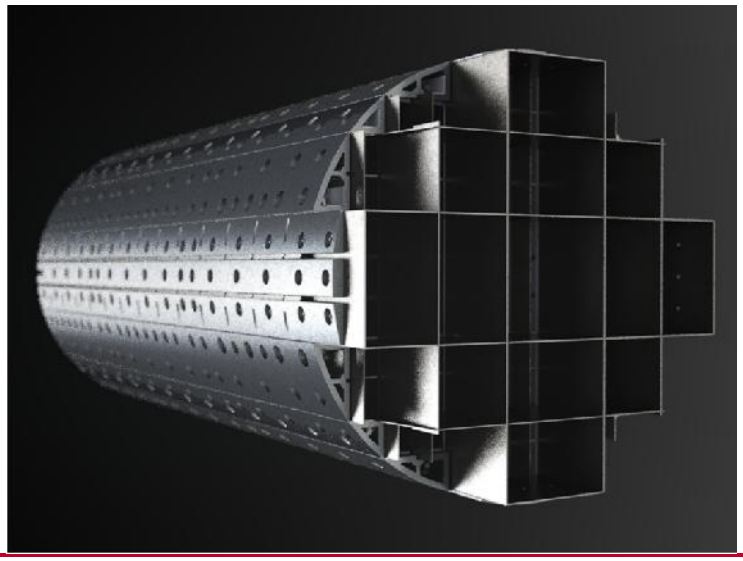
NUHOMS® EOS
State-of-the-Art Basket Design



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NUHOMS® EOS 37PTH and EOS 89BTH

- **NUHOMS® EOS 37PTH System**
  - 37 PWR Fuel Assemblies
  - Maximum Planar Average Initial Enrichment – 5.00 wt. % U-235
  - Maximum Assembly Average Burnup – 62 GWD/MTU
  - Minimum Cooling Time – 3 Years
  - Variable Fuel Assembly Length
- **NUHOMS® EOS 89BTH System**
  - 89 BWR Fuel Assemblies
  - Maximum Planar Average Initial Enrichment – 4.80 wt. % U-235
  - Maximum Assembly Average Burnup – 62 GWD/MTU
  - Minimum Cooling Time – 3 Years
  - Variable Fuel Assembly Length

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Aging Management Plan

NUHOMS® EOS Inspection

- **Inspections**
  - NUHOMS® EOS horizontal storage modules have built-in inspection port
  - Above ground system allows for ease of inspection of 100% of DSCs without lifting
- **Non-Destructive Examination (NDE) Tools**
  - NDE techniques include high resolution cameras, surface deposit sampling, eddy current inspection
  - Established NDE techniques used to inspect canisters with implementation tool well into development
- **Above ground, horizontal system allows for:**
  - Simple retrieval for inspection
  - Ease of retrieval for shipment off site
  - Ease of accessibility in case of need for cleaning or repair

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NUHOMS® EOS Corrosion Proof

- **NUHOMS® EOS Canister in Duplex Stainless Steel**
  - **Not susceptible to stress corrosion cracking in chloride environments**
  - **Highly resistant to localized and general corrosion**
  - **Exceptional heat transfer capabilities**
  - **Exceptional mechanical strength and energy absorption**
- **Used in other AREVA Nuclear Waste Applications**
  - **TRUPACT-III Transportation Package Containment Boundary**
  - **High Integrity Radioactive Waste Containers**
- **Use 80+ years in aggressive corrosive environments**

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Conclusion

- **NUHOMS® EOS** builds on a state-of-the-art and proven system with **innovations that prepare for the future…**
  - **Unparalleled safety and low dose performance**
  - **Lowest risk and dose in canister loading and transfer**
  - **Highest seismic capability**
  - **High capacity**
  - **High-strength alloy materials with enhanced thermal performance … 50kW**
  - **Innovative non-welded basket design**
  - **Streamlined fabrication process**
  - **Corrosion-proof duplex stainless steel for plants in marine environments**
  - **Built-in inspection port for Aging Management**
  - **Building enclosed for plants located in areas where appearance is important**

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