NAC’s Project Perspectives and Priorities

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2019 NAC Priorities -

- Nuclear Plant Decommissioning Dry Storage
- Long-term Storage (License Renewals, Aging Management)
- Centralized Interim Storage Facilities (CISF)
- Integrated Waste Management – High Level/Low Level Waste Management
- Spent Fuel and Radioactive Waste Transportation System Applications
- International Programs
- Invigorate NAC Consulting

NAC’s Spent Fuel Technology Development Drivers:

- Maintain safe operations with low occupational dose
- Meet Nuclear Power Plant Operational or Decommissioning Fuel Storage needs
- Provide effective long term used fuel storage and transportation solutions that all stakeholders can support
Decommissioning Continues to Demand High Performance Dry Cask Storage Systems

NAC has decommissioned several sites using regionalized loading patterns at less than 30kW (balancing reduced time to pad with low occupational exposure) – NAC continues to pursue higher heat capacity, additional optimized loading patterns and operational efficiencies to meet current and future defueling needs without jeopardizing future transport options.
Long-term at-site Storage

Active License Renewals (Submittal by 2020):

- NAC UMS Certificate **72-1015**
- NAC MPC Certificate **72-1025**

Details:

- Time Limited Aging Analyses (TLAA):
  - Developed appropriate analyses using MAPS NUREG and EPRI Aging Management guides

- Aging Management Programs (AMP):
  - Developed applicable AMPs using MAPS NUREG and EPRI Aging Management as guides

- License Renewal Approvals
  - Performed in-service inspections, improved inspection technologies with OE
  - Developing storage system service life enhancements to support potential renewals beyond 60 years
Consolidated Interim Storage

ISP Consolidated Interim Storage Facility (CISF)

- NAC storage technologies included in the ISP’s CISF license submittal
- NAC continues development of innovative operations technologies and transportation solutions required for effective implementation of a CISF
NAC remains engaged in the operation and package development of High-Level Waste Management leveraging existing and new technology development.

West Valley Demonstration Project (WVDPP), West Valley, NY

- 56 NAC-MPC systems Deployed
- Utilized commercially available dry cask technology for DOE HLW
- Licensing under 10CFR830 – DOE safety case for the site
- Licensed for transport in the NAC-STC

Optimus-H and Optimus-L

- High- and Low-Level Waste Transport packages
- Modular design allows configurations for maximum shielding
Integrated Waste Management

Hanford Waste Encapsulation and Storage Facility (WESF) Dry Storage

- Adaptation of the NAC-MPC system for dry storage of the Hanford Cs/Sr capsules
- Total of 1,936 Capsules will be stored on an ISFSI type facility
- Multiple capsules are loaded into “Universal Canister Sleeves” which are then loaded into a “TSC” type containment/confinement system for storage/transport
- Licensing for storage under 10CFR830 – DOE safety case
Packaging and Transport Project Developments

Currently 4 NAC-STC Casks in operation in China, with 6 more pending deployment. Now performing routine shipments of High Burnup bare fuel, leveraging NRC HBU Amendment approved in 2017.
Transport Cask Integration - MAGNATRAN

- Transport Overpack for MAGNASTOR Systems
- Designed with Universal Transport Capabilities
  - Future licensing will incorporate NAC-MPC and NAC-UMS Storage Canisters
- Compatible with NAC Canister Transfer Facility for ISFSI to CISF Transport Readiness
International Progress

Taiwan - Kuosheng (MAGNASTOR), Chinshan (UMS)

Korea – Working with Doosan Cask Development (MSO)

China – Bare HBU Fuel Cask Deliveries

Supporting Japan Spent Fuel Cask and High Level Waste Projects with Hitachi Zosen
• Nuclear industry must be “at the top of its game” to meet current challenges and exploit new opportunities

• Wave of “retirements” (plants and people) means much of the best and most experienced talent is being sidelined just when it is most needed

• Consultancies have a vital role to play by harnessing expert talent and cost-effectively redeploying it to drive performance improvements:
  • Reduced costs through “surgical” application of expertise as-needed
  • Keeping experts actively engaged with industry to ensure knowledge transfer to the next generation

Sector currently highly fragmented and would benefit from consolidation to create a more efficient market for providing access to needed technical expertise
Spent Fuel and High-Level Waste Management

- Remain flexible to adapt to changing spent fuel disposition strategies (political, regulatory, etc.)
- Continue to develop more efficient used fuel and waste management strategies to support both commercial and government facilities
- Complete license renewal applications for both MPC and UMS (dry spent fuel storage once viewed as interim, is now “longer” term storage)
- Implement effective Aging Management Programs and design options supporting further utilization of Consolidated Interim Storage Facilities
- Continue to advance a robust spent fuel transportation program – consider transport cask design features to meet near term & future transportation objectives
- Work with our regulator to develop more efficient and effective licensing processes, leverage current research activities in areas of material performance, thermal analysis and shielding performance
- Invigorate Consulting practice to harness expert talent and cost-effectively redeploy it to drive performance improvements and to address pressing industry needs

Recent industry trends suggest extended storage, transportation and CISF options are key considerations for used fuel/HLW management and decommissioning strategies absent a predictable repository program timeline.
QUESTIONS?