

The safe, long-term storage of spent nuclear fuel is an industry-wide problem. While the industry awaits a government solution, spent fuel bundles continue to amass in spent fuel pools at plant sites. The interim solution today is dry cask storage. Several products have emerged in this area, but the process of determining which design to use and which fuel bundles can and should be loaded into the casks can be an overwhelming task.

Loading fuel casks requires a detailed evaluation of every fuel bundle in the pool, often numbering in the thousands. Bundles must undergo classification, where they are divided into groups based on mechanical attributes, decay heat, and integrity properties. Limits are placed on what types of bundles may be loaded together into dry storage casks, and those requirements vary based on the model of the cask and the supplier.

To have a successful fuel loading campaign, a vendor experienced with the broad range of fuel designs utilized over the last forty years as well as the cask models to be loaded is essential. TransWare has been serving the nuclear industry for over 27 years, supporting plants in all aspects of core management. This has provided us with valuable experience with the full range of BWR and PWR fuel assembly designs.

We can assist you with all aspects of your spent fuel management program including spent fuel movement planning (e.g. B5B), spent fuel pool cleanout, spent fuel pool gamma heating analysis, spent fuel pool poison panel doses, fuel characterization, fuel integrity assessment, cask loading plans,

best estimate decay heat analysis, dose rate estimates and reduction strategies, cask vendor and system selection, ISFSI design, engineering evaluations, third-party reviews of vendor analysis and training. We are also 50.59 and 72.48 qualified at several utilities.

TransWare has helped classify more than 40,000 fuel assemblies, many with histories going back as much as 40 years. We've assisted several plants in updating their fuel selection software and selected fuel for more than 225 casks from vendors such as Holtec, TransNuclear and NAC, loading more than 11,000 fuel bundles. Since we have worked with the three major vendor cask designs, we have developed a detailed understanding of each of the cask vendor's hardware, operation, and design and licensing basis.

TransWare has performed its work either under the utility QA program, or under the TransWare QA program, which is a NUPIC-approved quality assurance program that meets the requirements of 10CFR50, Appendix B and 10CFR21.

To learn more about TransWare and what we can do to help you with your spent fuel management needs, contact us by phone or email and we'll create a proposal geared toward *your* issue for *your* plant.



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# **Fuel and Component Characterization**

- Fuel type, enrichment, dimensions
- Fuel and component exposure history
- Fuel and component decay heat
- Fuel and component gamma/neutron source
- Fuel integrity classification

# **Cask Loading Plans**

- Spent fuel management optimization
- Dose rate reduction

#### **Procedures**

- Fuel characterization
- Cask loading plan
- Site cask loading procedure updates

### **ALARA Planning**

- Cask loading
- Evaluate shielding packages
- Cask location on ISFSI pad
- Evaluate loading a different cask design

# **Engineering Evaluations**

- Radiation monitor response
- 10CFR 72.124 criticality monitoring evaluation

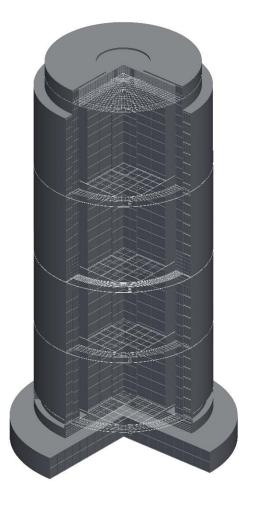
# **Third Party Reviews**

- 10CFR 72.104 analysis
- 10CFR 72.212 report

#### **Training**

- Cask system design
- Part 72 regulations
- Fuel characterization and fuel integrity classification
- Cask loading plan development

# 10CFR 72.48 Qualified





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