

Decontamination, Decommissioning, Remediation and Waste Management

Dry Cask Storage – ISFSI Services

Background

Dry cask storage in/on an Independent Spent Fuel Storage Installation (ISFSI) is the preferred solution for used nuclear fuel until a permanent geologic repository is established by, or for, the US Government. Westinghouse, through our acquisition of CB&I Stone and Webster, has extensive experience in design, analysis, licensing, and construction of an ISFSI. We also have the experience and expertise required to evaluate dry storage options along with design and construction of ISFSI expansions.

Description

- **ISFSI planning and studies**

We assist clients with initial planning and evaluations to develop an efficient approach, budget, and schedule.

- **Site evaluations and geotechnical investigations**

We perform soil surveys, evaluate geotechnical conditions per US Nuclear Regulatory Commission (NRC) requirements, prepare environmental assessments consistent with the National Environmental Policy Act or applicable state regulations, and perform cost-benefit evaluations.

- **Cask vendor specifications and selection**

We continually update storage cask technologies and licensing progress by all active US vendors; maintaining staff, that are members of the American Society of Mechanical Engineers (ASME) participating in the governing of cask designs, enabling us to be informed and resolve industry issues.

As an independent consultant, we determine the best storage cask solution for the client's site; preparing storage system procurement specifications, including evaluating vendor designs and licensing submittals.

- **Engineering and design**

We maintain a core of experienced engineers (civil, geotechnical, structural, architectural, electrical, mechanical, security, and radiological) to perform ISFSI designs. This core group is supported by a strong corporate team that includes recognized experts in specialties such as single-failure-proof crane upgrades, materials and coatings, welding and ASME code compliance. This allows us to deliver a package of drawings and specifications required to procure all elements and construct an ISFSI.

- **Security systems engineering and design**

We have expertise in security system changes required for an ISFSI, performing modifications to plant lighting, security systems and power. All security work is performed in accordance with the Safeguards Information project procedures, which comply with 10 CFR Part 73.21 requirements.

- **Construction and quality assurance**

We provide construction management or complete ISFSI construction, either under our NRC approved Quality Assurance program or under the customer's programs. We also have the capabilities and geographical reach to provide ASME, ANSI, and NQA-1 qualified shop inspectors to oversee cask vendor fabrication activities.



Typical Independent Spent Fuel Storage Installation.

- **Licensing**

We assist clients with all aspects of licensing an ISFSI to 10 CFR Part 72 requirements. For a general license, we perform analysis and evaluations required by Part 72.212 to document the ISFSI is bounded by the Certificate of Compliance and technical specifications for the storage cask system. We perform evaluations required under Part 50.59 and 72.48 to demonstrate the loading and storage of spent fuel in/on the ISFSI will not present an unreviewed safety question, or violate the ISFSI storage system or plant requirements.

For a site specific license strategy, we prepare the required safety analysis and environmental reports; security, emergency, and decommissioning plans; license applications; and technical specifications.

The present status of the Department of Energy's (DOE) commitment for receipt of used fuel has led to the need for ISFSI license renewals beyond the original license term. We have experience in developing the documentation and analyses required for license renewal under the US NRC guidelines within NUREG – 1927.

- **ISFSI expansion**

Due to delays in a long term used fuel repository, existing ISFSI installations will require expansion, with licensing efforts for modifications required to increase storage capacity. There are multiple solutions to satisfy expansion requirements; our focus is on cost containment and licensing compliance. We provide expertise in the following elements:

- Expanded or new ISFSI analysis and design
- Soils design including geotechnical analysis
- Haul path extension and evaluation of underground utilities
- Expansion of security boundaries and systems
- Electrical distribution modifications
- License amendments for site specific or general licenses

Deliverable

Westinghouse is very involved with the future development of dry fuel storage solutions and has contracts with the DOE for Yucca Mountain and interim storage projects. We understand what will be required to develop off-site loading and shipment, and can perform requirements studies for utilities. These studies could include evaluation of the structures, equipment, and operations required at the plant site and intermodal site.

Experience

Westinghouse has completed many ISFSI-related and used fuel loading support projects to date. Below is a brief list of our experience.

Support	Experience
Design, engineering, licensing support	7 Holtec sites 4 Areva TN sites 1 NAC site
ISFSI Construction	3 sites
Engineering study	6 utilities
Bid specification	2 utilities
Bid evaluation	2 utilities
ISFSI expansion	1 site
DOE task order	6 tasks
Single-Failure-Proof Crane Upgrades	24 sites
IP3 fuel transfer between units	
Fukushima recovery operations	