Spent Fuel Manufacturing and Technology in Japan

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SF Storage Status in Japan

- Spent fuels in Japan,
  - Majority is stored in the spent fuel storage pool at each power plant.
  - Spent fuel pools are almost full, but fuel inventory has not increased since Fukushima Daiich accident.

source: cao.go.jp/google.co.jp
Two ISFSIs before Fukushima Accident

- Two ISFSIs already in operation before Fukushima Daiichi accident:
  - At Fukushima Daiichi NPS,
  - At Tokai No.2 NPS.
- Although the ISFSI at Fukushima Daiichi was flooded during Tsunami, all casks were safe. This fact is used by some as an evidence that the cask is safer than the pool.
- The storage building at Tokai No. 2 NPS relies on the casks that are stored in the vertical position. The ISFSI continues to operate.

Metallic Cask at Tokai No. 2 NPS

- Both ISFSIs started operation in 1990.
- Large scale metallic casks based on the transport casks were adopted.
- The photo shows the cask that Hitachi Zosen delivered to Tokai No. 2 based on the large transport casks design.
Other ISFSIs in Japan

- Two spent fuel storage project:
  - Mutsu centralized interim storage facility,
  - ISFSI at Hamaoka NPS, Chubu EPC.
- The cask storage facilities at Fukushima Daiichi
- Metallic casks are used at these facilities

Concrete Cask/Module

- Concrete cask/module began to be used in the United States in early 2000.
- Reason:
  - Economical advantage
  - Higher design freedom
- New Japanese ISFSIs did not select concrete cask/modules
Two Issues for Concrete Cask/Module in Japan

- With respect to a concrete cask/module in Japan, there are two issues that pose potential disadvantage for a concrete cask/module:
  - An idea that a storage cask should be stored inside the building.
  - An anxiety to the possibility of CISCC

Storage Building

- The area of building to accommodate a concrete cask is roughly 1.2 to 1.4 times wider than the building for a metallic casks.

- Recently, there has been a very favorable message from the chairman of NRA:
  - No building is necessary for cask storage because casks are designed and fabricated to withstand the severer conditions.
In Japan, it is extremely important to address the CISCC issue, because the storing facilities will be constructed in proximity to the ocean.

Study on CISCC has advanced in recent years:
- CISCC is never induced under the compressive condition.
- Surface treatment methods are provened practical to change the residual stress to compressive.

Therefore, supply of an efficient SCC resistant canister is now possible.
The storage of the spent fuel is an important issue.

Many person recognizes that the storage in the cask is safer and reasonable.

The spent fuel storage cask should be robust, economical and to address a potential large demand.

A concrete cask/module canister system can prove to be the best solution.

Our company has been delivers a high efficient concrete cask canisters to the U.S. We want now making a significant effort to introduce concrete cask systems to the Japanese market.