

Pilgrim Dry Cask Fact Sheet/Q&A

Why does Pilgrim need dry cask storage?

Nuclear fuel used to generate electricity comes in bundles and needs to be replaced regularly as it loses its efficiency over time. These used bundles, also called assemblies, are stored on-site in a very deep pool of water. The federal government was supposed to start taking the spent fuel to a national repository in 1998, but it has not followed through on that plan. Though new racking technologies have allowed for increased storage capability within Pilgrim's pool, it is reaching capacity so we need to move some of the fuel to dry cask storage.

How long has dry cask storage been allowed by the NRC?

Dry cask storage, also known as dry fuel storage, was approved by the Nuclear Regulatory Commission (NRC) in the 1980s and has been employed by other nuclear power companies since 1986. About half of the nuclear power plants in US are either using dry cask storage or have a project planned. A map of all dry fuel storage sites can be found at <http://pbadupws.nrc.gov/docs/ML1305/ML13057A527.pdf>

How do the casks work?

There are a variety of NRC approved dry cask systems. Pilgrim plans to use a vertical system with steel and concrete casks that sit on a concrete pad. We will store spent fuel in Holtec HI-STORM 100 model casks. These casks have a two layer system with an interior seal-welded multi-purpose canister that can hold 68 spent fuel assemblies and an exterior steel and concrete storage cask. Each cask is 18 feet tall and 11 feet wide and when loaded weighs 360,000 pounds. The casks use passive cooling, and there is no reliance on mechanical systems. These casks have been in use since 2000 and over 500 are in use across the US.

Is dry cask storage safe?

Yes, dry cask storage is safe. The Nuclear Regulatory Commission licenses all container designs. Before approval, containers must meet rigorous engineering and safety criteria and be able to pass a series of hypothetical accident conditions. The NRC has performed cask studies on Holtec Technology including:

- Leak-tight evaluations for welded stainless steel containers
- Transport accident crash testing
- Terrorist truck bomb
- Tunnel fire

Post-crash assessments demonstrated that the containers would not have released their contents.

The casks are seismically designed and can sustain a 360 mph tornado and tornado missile. They can also withstand floods.

No U.S. cask has been "reopened" in the 25+ year history of their use. Nevertheless, there are procedures available to return fuel to the spent fuel pool, if necessary.

How much spent fuel will Pilgrim move into dry cask storage?

Pilgrim plans to place only that spent fuel in casks which is needed to maintain sufficient room in the spent fuel pool to conduct reactor refueling, and only until the spent fuel can be transported to a national spent fuel repository. The first phase involved the loading of three casks.

When did Pilgrim begin its dry cask storage program?

On July 30, 2013, Pilgrim received its building permit from the Town of Plymouth to construct the pad on which the casks are stored. The pad is 52 feet wide and 238 feet long. It is located 25 feet above sea level. The pad is also seismically designed. The Phase 1 Project included roadwork to create a hardened cask travel path out to the pad, the construction of the pad, upgrades to the on-site crane, as well as the purchase of ancillary equipment. The project that included loading and placement of the first three casks on the pad was completed on February 4, 2015.

When will new casks be added?

Pilgrim expects to load an additional three casks every 24 months.

Does any heat or radiation escape from the casks?

The canisters do let off low levels of heat equivalent to what is given off by a home-heating system. The heat and radioactivity of the spent fuel in the casks decreases over time without the need for fans or pumps. Radiation from the canisters is thousands of times below federal NRC limits for releases. In fact, workers can perform work activities in close proximity to a canister and receive no harmful effects of radiation from the fuel within the canister. Dry cask storage does not pose any risk of exposure to low levels of radiation.

What happens if there is natural disaster such as a hurricane, earthquake or flood?

The casks, each of which weighs 360,000 pounds, can resist earthquakes, projectiles, winds from hurricanes and tornadoes (up to 360 mph), and floods.

What happens if the casks are targeted by terrorists?

First, the casks are stored in the protected area and given the many layers of security at the plant it is highly unlikely anyone, other than official plant personnel, could access the casks. In addition, numerous analyses, including terrorist scenarios, have been conducted on the ruggedness of the various dry cask containers. Sandia National Laboratory concluded the probability of a 767 crash breaching a HI-STORM System was not credible.

In other analyses, MK-84 Ordnance and F-16 strikes were launched on the Holtec casks. In all of these analyses, it has been concluded that the robust system of concentric steel and concrete cylindrical containers will prevent radioactive material from being released into the environment.

The casks are also designed to withstand a car bomb and tornado missiles.

Are there any environmental impacts from the dry casks?

Environmental impacts resulting from dry cask storage are minimal both for construction and use of the facility. It is important to note that there is no potential for radiologically contaminated storm water runoff, since the canisters holding the fuel are seal-welded shut. The NRC has made a generic determination that spent fuel can be stored safely and without significant environmental impacts for at least 30 years beyond the licensed reactor life.

Will there still be spent fuel in the pool?

Yes, Pilgrim will continue to store spent fuel in its pool as is allowed by our license with the NRC.

When will the spent fuel be moved offsite?

All of Pilgrim's spent fuel will remain on-site until such time that a federal repository is constructed and opened to accept spent nuclear fuel. The only spent fuel stored on-site at Pilgrim comes from our operations. No other spent fuel from any other facility is or will be present.

Sources:

US NRC

<http://www.nrc.gov/waste/spent-fuel-storage/dry-cask-storage.html>

<http://www.nrc.gov/waste/spent-fuel-storage/diagram-typical-dry-cask-system.html>

<http://www.nrc.gov/waste/spent-fuel-storage/faqs.html>