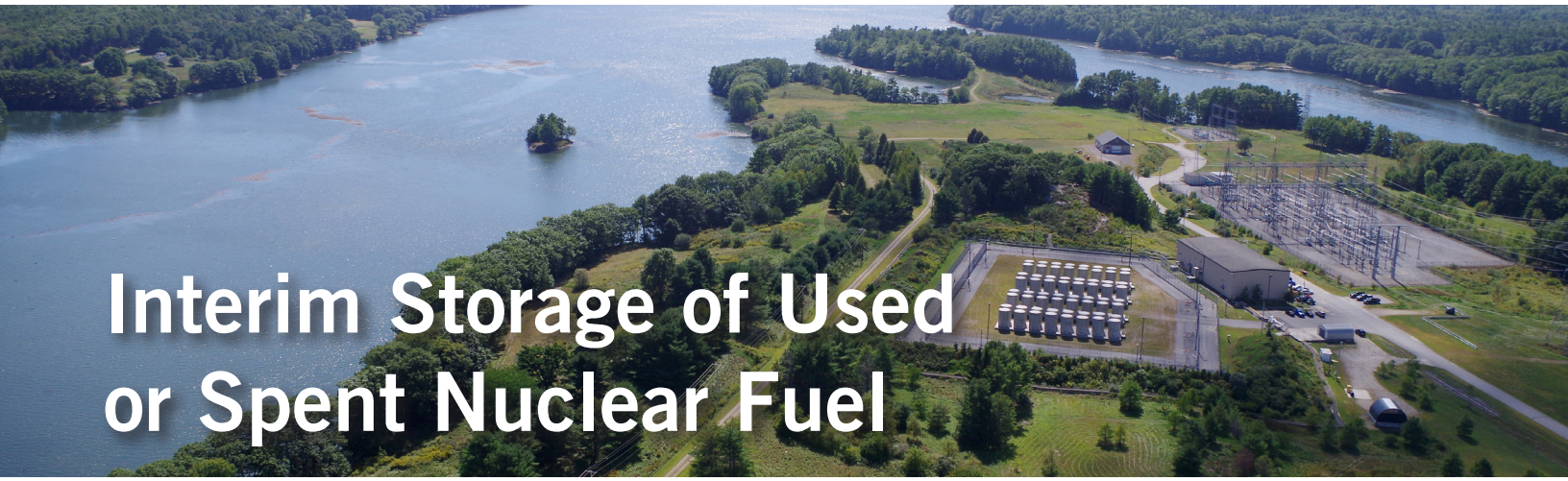
American Nuclear Society

Position Statement #76



Interim Storage of Used or Spent Nuclear Fuel

The American Nuclear Society (ANS) endorses interim storage of irradiated fuel from a nuclear power reactor (commonly referred to as spent or used nuclear fuel, and referred to herein by the acronym UNF) until final disposal is completed. In the United States, the Nuclear Regulatory Commission (NRC) is the licensing and regulatory authority for used fuel management.

Newly discharged UNF is stored underwater in pools at reactor sites. As these pools approach capacity limits, the UNF is transferred into robust metal or concrete and steel dry storage systems typically located on or near the reactor site in a facility commonly referred to as an Independent Spent Fuel Storage Installation (ISFSI). These relatively simple and passive dry storage systems protect against events that could result in radiological releases into the environment. The ISFSIs are monitored and secured to ensure continued protection.

As of 2016 the U.S. nuclear industry had loaded and placed into service over 2300 dry storage systems at 68 locations in 33 states since 1986[1]. Plant workers, the public, and the environment have been effectively protected in every case.

Current operational and decommissioned nuclear power plants in the U.S. were licensed with the expectation that the UNF would be stored at the nuclear power plant site for a short period of time until shipment to a recycling plant or geologic disposal facility for high-level radioactive waste. However, no facility capable of receiving UNF is operating in the U.S. and it is uncertain when one might become available. Therefore, utilities have been forced to store UNF at nuclear power plant sites in greater quantity and for longer time periods than originally envisioned.

ANS believes that the successful operating experience to date demonstrates that UNF storage at nuclear power plant sites has been, and can continue to be, achieved in a safe and environmentally sound manner.

As longer periods of storage become inevitable, the nuclear industry and NRC have placed an increased emphasis on assuring the long-term integrity of storage systems. This is being accomplished through aging management programs similar in scope to those that have been successfully deployed at more than 80% of the U.S. commercial nuclear reactor fleet (extending operations from 40 to 60 years, with periods of up to 80 years under consideration).

ANS believes that aging management programs for UNF storage will be as effective as those already applied to reactors. NRC's recent determination that the environmental impacts of continued storage of UNF are small supports this conclusion – as, in reaching this conclusion, the NRC examined storage periods of as long as 100 years without any repackaging of the UNF[2].

Nevertheless, interim storage of UNF is a partial and temporary answer to managing the UNF produced by nuclear power reactors. ANS supports the ultimate development of recycling (see *Position Statement 45, Nuclear Fuel Recycling*) and geologic disposal (see *Position Statement 80, Licensing of Yucca Mountain as a Geologic Repository for Used Nuclear Fuel and High-Level Radioactive Waste*).

Until recycling and/or geologic disposal can be accomplished, ANS also supports the development of consolidated away from reactor

interim storage for UNF – in most cases using the same proven technology now deployed at reactor sites[3]. Consolidation could result in a more efficient storage system (as aging management and security capabilities could be combined for a larger number of systems). It would also allow land which is currently being used to store UNF at decommissioned reactors to be returned to surrounding communities for other purposes. Away from reactor consolidated storage facilities have been safely operated for decades in Europe, using both wet (pool) storage and dry storage technology.

Until recycling and/or disposal facilities are in operation, the interim storage of UNF can continue under current controlled conditions – in pools and casks at either reactor or consolidated sites.

References

1. Gutherman Technical Services, July 2016
2. Generic Environmental Impact Statement for Continued Storage of Spent Nuclear Fuel, NUREG-2157, Sept. 2014
3. S. P. Nesbit, "Centralized Interim Storage – Past, Present, and Future", Radwaste Solutions Buyers Guide, November-December 2012

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