



## **Radiation Exposure during Spent Fuel Transfer and Storage at CNE-PROD Cernavoda NPP**

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Cernavoda NPP is a five units (CANDU 600 MWe) power plant with one unit in operation. The underwater spent fuel storage facility was designed with a storage capacity of 50,000 spent fuel bundles with a discharge rate of 5,000 fuel bundles annually. After six years of plant operation in the spent fuel storage bay there were stored 30,344 fuel bundles. Due to limited capacity of underwater spent fuel storage facility it was necessary to build an Intermediate Dry Spent Fuel Storage Facility (IDSFSF).

The design of the IDSFSF was developed by AECL and contains strength safety features to ensure the safety of operating personnel, of the public and the long-term integrity of the fuel. The licensing process started in 2001 by getting the Sitting Licence followed by the Construction, the Commissioning and the Operating Licences (2003). During 2003 there were performed 60 transfers to IDSFSF.

The IDSFSF is the MACSTOR system designed for storing spent fuel cooled for a period of six years consisting of storage modules located outdoors in the storage site and equipment operated at the spent fuel storage bay for preparing the spent fuel for dry storage.

The fuel is prepared for dry storage in the main fuel storage bay and in the Shielded Work Station (SWS).

The spent fuel is transferred to dry storage from the storage bay with a trailer, in a transfer flask, within the Cernavoda site exclusion boundary.

The transfer flask shields the spent fuel basket during transfer operations (contact gamma dose rate 25 microSv/h).

The fuel storage area consists of a fenced site, sized to accommodate 27 MACSTOR modules arranged in an array of 2 by 10 modules and one by 7 modules.

The storage modules have two sealed containers for storing the spent fuel: a seal welded stainless steel basket containing 60 fuel bundles and a seal welded steel cylinder containing 10 storage baskets.

The storage module is designed for a low general contact dose rate (25 microSv/h) thus maintaining an effective occupational dose for workers and dose to the public below the requirements: 20 miliSv/year and 100 microSv/year respectively.