Atucha I: NPP Spent Fuel Dry Storage Conceptual Design

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Abstract. The present report show a brief summary of the management of the Spent Fuels of the nuclear power plants installed in Argentina, but focusing the attention in to the Atucha I (ANPP I) Spent Fuel Dry Storage Conceptual Design.

According to the scenario projected by NASA for ANPP I operation, considering a power factor of 85%, the pool storage capacity will be exhausted in March 2015. Plant End of Life by design will be reach in December 2017.

Its aim is emptying the former oldest fuel elements pool and storage them in a Dry Storage System, in order to reach the 32 FPY of ANPP I End Of Life **[1]**. The project consist mainly in the enlargement of one of the Pool Buildings of the Station (there are two of them) where the Spent Fuel Elements (SFE) will be stored in vertical underground silos (Fig. 1). Each silo is composed of two storage units that contains 9 fuel elements each (18 fuel elements in each bin). This design allows a vertical storage of 2016 spent fuel elements (7 rows by 16 columns). The SFE must be transferred from the Pool Building to the Dry Storage Building through a dedicated shield for lifting and transporting the SFE. To move the shield, the actual 60 Ton capacity crane will be used. The operation time to emptying a complete pool will be approximately one year (1998 SFE). Therefore the storage system should be finished by 2013, in order not to penalize the continue operation of the Station. This conceptual design meets the basic principles of Nuclear Safety, protecting workers, public and the overall environment of ionizing radiation and radioactive contamination. This is achieved by transport and storage shielding, operation procedures and comply key conditions like subcriticality of the system, SFE monitoring and SFE heat removal.

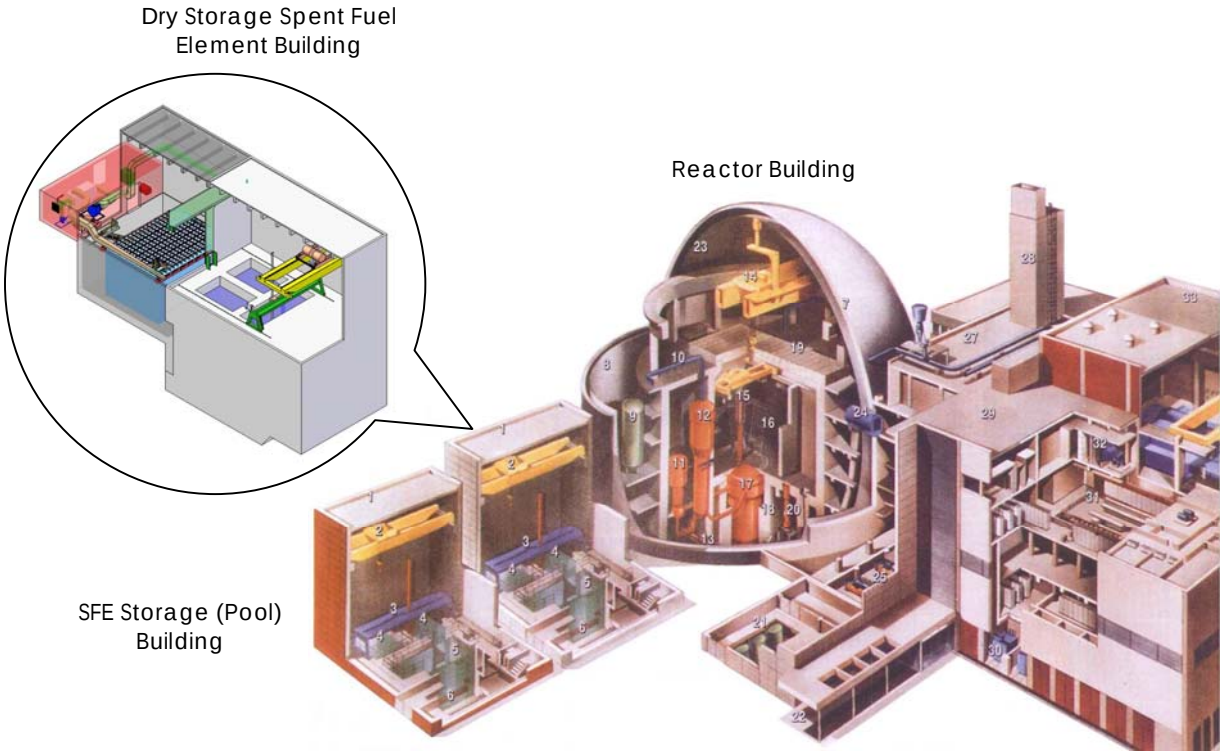

FIG. 1. View of the location of the Dry Storage Building in the Atucha I Nuclear Power Plant

References

[1] - “Ingeniería Conceptual Proyecto Almacenamiento Transitorio en Seco de los Elementos Combustibles Gastados de la Central Nuclear Atucha I”. Ingeniero Oscar Beuter. CNEA, Buenos Aires Argentina. 2010.