

Technical Meeting on Advanced Technology Fuels: Progress on their Design, Manufacturing, Experimentation, Irradiation, and Case Studies for their Industrialization, Safety Evaluation, and Future Prospects

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LEAD TEST RODS PROGRAM WITH CR-COATED CLADDING AT DOEL-4

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In order to obtain the first-hand information and valuable in-pile experience with evolutionary accident tolerant fuel (ATF) products, ELECTRABEL (ENGIE) and European Fuel Group (EFG) has reached an agreement in 2019 to load 4 RFA-2 OPT XLR fuel assemblies with EnCore® Cr-coated cladding lead test rods (LTRs) at Doel Nuclear Power Plant Unit 4 (Doel-4). Under this agreement, ENUSA and Westinghouse (EFG) are responsible for fuel design and safety evaluation, manufacturing, transportation and on-site inspection; TRACTEBEL (ENGIE) is responsible for core design and safety evaluation, as well as independent review and support to licensing; ELECTRABEL is the Licensee of the plant Doel 4, and is responsible for fuel loading and operation [1]-[4]. The licensing has been performed by Bel V, the technical support organization (TSO) to the Belgian Safety Authority (FANC) [5].

The Doel 4 LTR program was reviewed and approved by Bel V, in February 2020. The LTRs at Doel-4 were loaded at Doel-4 in July 2020, and have since completed its third cycle of operation in fall 2024. Pool side inspection has been performed after the first cycle [6] and second cycle [7], and the inspection results have been presented to Bel V to demonstrate the good performance and reloadability of the LTRs.

This paper presents the LTR program (§2), fuel design and safety evaluation (§3), core design and safety evaluation (§4), pool side visual inspection results (§5).

Authors: Mr MEERT, ARNAUD (ELECTRABEL); Dr ZHANG, JINZHAO (TRACTEBEL (ENGIE))

Co-authors: Ms WALTERS, JORIE (WESTINGHOUSE); Ms DONCEL, NURIA (ENUSA)

Presenters: Dr ZHANG, JINZHAO (TRACTEBEL (ENGIE)); Ms DONCEL, NURIA (ENUSA)

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