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EFFECT OF THERMAL NEUTRONS ON THE MECHANICAL PROPERTIES OF STAINLESS STEEL AND INCONEL REACTOR INTERNALS

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Abstract: The irradiation embrittlement of Reactor Vessel Internals is essential to perform the Time Limited Aging Analyses studies in view of the Life extension of Nuclear Power reactors. Heavy water reactors, such as Atucha and Embalse, has thermal flux comparable with the fast flux, therefore it is necessary to consider the efficiency of thermal neutrons in the calculation of displacements per atom. Using the SPECTER calculation code, the effective damage function for stainless steels and nickel-based alloys is obtained extending the concept introduced by *Jones R. B., Edens D. J., Effects of Radiation on Materials, ASTM STP 1366*, in the context of ferritic steels. Finally, the results are compared with the Canadian experience in CANDU type reactors.