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IN-SERVICE INSPECTION. ITS CONTRIBUTION TO LIFE MANAGEMENT BY REDUCING O&M COSTS

Antonio Alonso
Director General
Tecnatom, S.A.
Spain

In-service inspection (ISI) of nuclear power plant components has a double function. It provides assurance of structural integrity, but it also allows taking corrective measures before degradation becomes severe and structural margin is eroded. Therefore, periodic in-service inspection offers effective means of detecting the effects of the degradation mechanisms and to verify structural integrity. NPPs are committed to establish ISI programs to assess the structural integrity of their components to timely detect and prevent unacceptable degradation that may impair their safety functions. This way the key role of ISI in NPP life management is clear.

Nowadays a revision of the ISI scope is needed. The accumulated experience demonstrates that, generally speaking, the inspected areas did not have relevant cracks and that the problems appear in areas outside the in-service inspection scope. More and more the regulation that governs the practices for O&M of NPP is considering criteria based on risk information. The in-service inspection and in-service testing programs are also following this way and thus and as an example, in the case of Spain, risk informed in-service inspection and testing programs are being applied. Why? To optimise in-service inspection means to reduce inspection costs without impacting the operational safety level of the plant.

Is it possible? Only as an example, in a Spanish NPP, the initial scope of the ISI was 273 areas in class 1 piping (127 requiring volumetric inspection). After applying the RI-ISI methodology it became 59 areas (47 requiring volumetric inspection) and safety margin (core damage frequency) being 1.23 E-6 instead of initially 1.25 E-6 . Besides the savings because of reducing the ISI scope of NPP, big efforts are being done in reducing ISI time, associated doses, ... by means of improving NDE techniques, equipment / tools and personnel qualification.