

A Study on One-Time Inspection for Aging Management of Operating Nuclear Power Plants

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One-time inspection is used to confirm the effectiveness of nuclear power plant aging management programs such as water chemistry, fuel oil chemistry, and selective leaching program that is designed to prevent or minimize aging degradation during the plant operation. This paper represent one-time inspection experience of selected components and susceptible locations within the scope of water chemistry aging management program. Prior to perform one-time inspection, sample size of components to be inspected was determined based on assessment of materials, environment and aging effect. To minimize aging effect due to various degradation mechanisms, one-time inspection was carried out to inspect components made of carbon and low alloy steel, stainless steel that are susceptible to corrosion and stress corrosion cracking. Visual inspection and ultrasonic thickness measurement were considered to meet the inspection requirements. Also, relevant operating experience were analyzed to obtain technical basis for further implementation of modified one-time inspection practice. Existing correlation curve between sample size and total population number were reviewed and compared in order to prepare further inspections of entire operating plants and ensure safety level of the components subject to one-time inspection program. Current status on the fleet-wide aging management program development and its implementation was also described.